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**DEPARTMENT OF DEFENSE
STANDARD PRACTICE FOR
DEFENSE SPECIFICATIONS**



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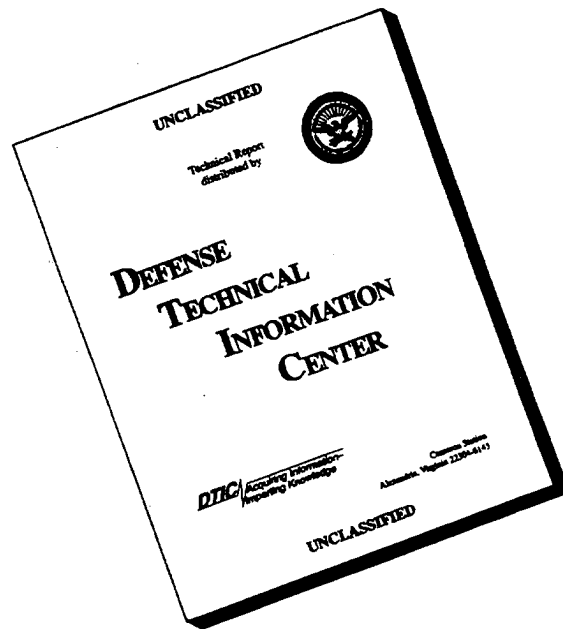
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FOREWORD

1. This standard is approved for use by all Departments and Agencies of the Department of Defense (DoD).

2. DoD 4120.3-M, "Defense Standardization Program Policies and Procedures," discusses the different types of specifications used by the DoD. This standard establishes practices for developing performance and detail specifications prepared by or for the DoD. This standard covers the requirements for "standard" performance and detail specifications, meaning specifications that are used on multiple programs or applications.

3. It is DoD policy to give first preference to developing and using performance specifications. If it is not practical or effective to use a performance specification, a non-Government standard should be used. If it is not practical or effective to develop and use a performance specification or non-Government standard, a detail specification may be developed and used, but only as a last resort.

4. There are two primary objectives for the changes to this standard. First, for the DoD to meet its military needs in the current economic and political environment, it must increase access to an expanded industrial base that can meet defense needs at lower costs with state-of-the-art commercial technology. The changes herein will move the DoD to greater use of performance-based specifications and commercial-type specifications and standards. The second objective is to ensure that the contents of specifications cover only the requirements for a product (preferably in terms of performance) and the tests to verify that those requirements are met. Specifications should not include contractual provisions, such as data requirements, quality assurance, packaging, or contract administration.

5. Proper preparation and use of standardization documents is a difficult task requiring careful analysis and good judgment. The following points highlight areas of policy emphasis, intent, or changes. Areas where actual problems have been encountered on specific documents are also included. They are intended as a "checklist" to assist in document preparation.

a. For commercial products, consideration should first be given to using or developing a non-Government standard or including DoD requirements in an existing non-Government standard, or developing or revising a commercial item description.

b. Documents should be structured and formatted to categorize requirements as precisely as possible. Requirements that are generally necessary but can occasionally be removed should be written so that they can be tailored out while leaving other requirements unaffected. Requirements that are necessary only in certain instances should be written so that they can be tailored in. There is sufficient flexibility to make adjustments which may be required for a particular document.

c. Detailed application guidance should be provided in the "Notes" section of each document. The purpose of this guidance is to provide noncontractual information on when and how to use the document. Information such as the following is recommended: (1) how to apply the document to different contract types and different program phases, (2) the source of and flexibility inherent with specific document requirements, (3) guidance on what is required to satisfy document requirements, (4) the extent of Government review and approval, and (5) the relationship between the particular document and other related documents in the acquisition process.

d. A carefully documented, permanent record should be maintained by the specification preparing activity of the source and reason behind particular requirements and changes to requirements. The rationale (measurement, testing, judgment, etc.) behind a specific numeric level is one example of what the record should contain. Issues and controversial areas during the coordination process should be noted, and it may be desirable to summarize these issues and areas in the "Notes" section of the document and solicit feedback as experience develops. This record should provide a basis for related application guidance and a history useful in future document revisions.

e. Clear distinction should be made between requirements portions and guidance portions of documents. Careful attention to use of the words "should" (guidance language) and "shall" (requirement language) is important.

f. Requirement statements should be clear and unambiguous. One test to apply in preparing a document is to ask what will a contractor have to do as a result of this requirement. The answer should be apparent to both the Government and the contractor.

g. To the extent possible, requirements should be stated in performance or "what-is-necessary" terms, as opposed to telling a contractor "how to" perform a task.

h. Care should be taken to avoid unnecessary reference to other standardization documents and document "tiering". References should be justified. When only a portion of another document needs to be referenced, only that portion should be referenced. Document preparers are cautioned that only first tier references are contractually binding. Critical requirements appearing in references below the first tier should be directly stated in the specification.

i. Ways to increase the use of commercial products and non-Government standards which will satisfy Government requirements should be an important consideration during document preparation or revision.

j. Data item descriptions should be developed and circulated with standardization documents during the draft coordination stages when applicable.

k. Feedback on the success or difficulties (benefits and costs) encountered in the application of the document on specific contracts should be encouraged. Such feedback may be made by DD Form 1426, by Material Deficiency Reports, or by letter or other appropriate forms.

l. Efforts should be made to encourage and obtain inputs and perspectives outside of a document's normal proponent group (such as the quality, reliability, or packaging communities).

m. Care should be taken to ensure that industry comments are requested during the draft stages of document preparation and that proper Government coordination occurs.

n. The figures appearing at the back of this standard are fictitious and are used only as examples to illustrate format. If there is any conflict between the text and the figures, the text applies.

6. This revision more strongly reaffirms the DoD's policy on prohibiting fixed levels of defects, such as acceptable quality levels (AQLs) and lot tolerance percent defectives (LTPDs), as firm specification requirements. Such specification requirements imply that defects are allowable, institutionalize the process of accepting non-conforming materiel, and do not motivate contractors to improve product quality. In addition, AQLs and LTPDs are not requirements or tests for the product being acquired. They reflect levels of risk that the customer is willing to take when acquiring a product. As such, AQLs and LTPDs should not be part of the specification, but may be part of the quality assurance provisions in the contract.

7. Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Office of the Assistant Secretary of Defense (Economic Security), Standardization Program Division, 5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3466, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

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1. SCOPE

1.1 Scope. This standard establishes the formats, contents, and procedures for the preparation of performance specifications, detail specifications, and associated documents, prepared either by Government activities or under contract (see 6.3 and 6.4). Associated documents for performance and detail specifications include associated specifications, specification sheets, supplements, revisions, amendments, and notices.

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 4 and 5 of this standard. This section does not include documents cited in other sections of this standard or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements documents cited in sections 4 and 5 of this standard, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation (see 6.2).

STANDARDS

FEDERAL

FED-STD-376 - Preferred Metric Units for General Use by the Federal Government.

DEPARTMENT OF DEFENSE

MIL-STD-12 - Abbreviations for Use on Drawings, and in Specifications, Standards and Technical Documents.
 DOD-STD-963 - Data Item Descriptions.
 MIL-STD-1806 - Marking Technical Data Prepared by or for the Department of Defense.

HANDBOOK

DEPARTMENT OF DEFENSE

MIL-HDBK-248 - Acquisition Streamlining.

(Unless otherwise indicated, copies of the above specifications, standards, and handbooks are available from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.2.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

DoDISS	-	Department of Defense Index of Specifications and Standards.
DoD 5010.12-L	-	Acquisition Management System and Data Requirements Control List (AMSDL).
SD-1	-	Standardization Directory.
SD-14	-	DoD List of Toxic Chemicals, Hazardous Materials, Ozone Depleting Chemicals, and Other Environmentally Damaging Substances.
Cataloging Handbook H2-1	-	Federal Supply Classification, Part 1, Groups and Classes.
Cataloging Handbook H6	-	Federal Item Name Directory for Supply Cataloging.
United States Government Printing Office (GPO) Style Manual.		

(Copies of DoD 5010.12-L, SD-1, and SD-14 are available from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094. Copies of Cataloging Handbooks H2-1 and H6 are available from the Commander, Defense Logistics Services Center, Battle Creek, MI 49017-3084. Copies of the GPO Style Manual are available from the Superintendent of Documents, U.S. Government Printing Office, North Capitol & "H" Streets, N.W., Washington, DC 20402-0002. Copies of the DoDISS are available on a yearly subscription basis either from the Government Printing Office or the DoDSSP Subscription Services, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.3 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted are those listed in the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS are the issues of the documents cited in the solicitation (see 6.2).

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME Y14.5M - Dimensioning and Tolerancing. (DoD adopted)

(Application for copies should be addressed to the American Society of Mechanical Engineers, 345 East 47th Street, New York, NY 10017-2392).

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE 260 - Standard Letter Symbols for Units of Measurement (SI Units, Customary Inch-Pound Units, and Certain Other Units (DoD adopted)

IEEE 268 - Metric Practice. (DoD adopted)

(Application for copies should be addressed to the IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08855-1331.)

2.4 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. DEFINITIONS

3.1 Acronyms used in this standard. The acronyms used in this standard are defined as follows:

- a. AMSC - Acquisition Management Systems Control
- b. AMSDL - Acquisition Management Systems and Data Requirements Control List
- c. CDRL - Contract Data Requirements List
- d. DepSO - Departmental Standardization Office
- e. DID - Data Item Description
- f. DoD - Department of Defense
- g. DoDISS - Department of Defense Index of Specifications and Standards
- h. DoDSSP - Department of Defense Single Stock Point
- i. FAR - Federal Acquisition Regulation
- j. FIPS - Federal Information Processing Standard
- k. FSC - Federal Supply Class
- l. FSG - Federal Supply Group
- m. GPO - Government Printing Office
- n. NATO - North Atlantic Treaty Organization
- o. NSN - National Stock Number
- p. ODC - Ozone Depleting Chemical
- q. PIN - Part or Identifying Number
- r. QML - Qualified Manufacturers List
- s. QPL - Qualified Products List

3.2 Associated specification. The associated specification is an extension of a general specification that covers requirements for specific parts, materials, or equipments. The associated specification is prepared in the six-section format outlined in 5.3.

3.3 Class. This term provides additional categorization of differences in characteristics other than that afforded by type classification which does not constitute a difference in quality or grade, but are for specific, equally important uses, and is usually designated by Arabic numerals, such as, "class 1" or "class 2."

3.4 Composition. This term is used in classifying commodities which are differentiated strictly by their respective chemical composition and is designated in accordance with accepted trade practice.

3.5 Coordinated specification. A coordinated specification is a document required by more than one Military Department, Defense Agency, or Civilian Agency and is coordinated with various activities of the interested departments and agencies.

3.6 Data. Recorded information, regardless of form or method of the recording.

3.7 Data Item Description (DID), DD Form 1664. A completed form that defines the data required of a contractor. The form specifically defines the data content, preparation instructions, format, and intended use. DIDs are prepared in accordance with DOD-STD-963.

3.8 Data product specification. A specification used to acquire such data products as technical data packages, drawings, test reports, and any other type of data, with the exception of technical manuals. Data product specifications are the source documents for DIDs and are listed in the AMSDL.

3.9 Detail specification. A specification that specifies design requirements, such as materials to be used, how a requirement is to be achieved, or how an item is to be fabricated or constructed. A specification that contains both performance and detail requirements is still considered a detail specification.

3.10 General specification. A general specification is prepared in the six-section format and covers requirements and test procedures that are common to a group of parts, materials, or equipments to be used with either associated specifications or specification sheets (not a mixture).

3.11 Grade. This term usually implies differences in quality and is usually designated by capital letters, such as, "grade A" or "grade B."

3.12 Hard conversion. A hard conversion is the process of changing a measurement from inch-pound units to non-equivalent metric units which necessitates physical configuration changes of the item outside those permitted by established measurement tolerances. The term "hard conversion" is in general use in the United States, although it is technically incorrect when applied to specific items

because no "conversion" takes place. Instead, a new metric item requiring a new part identification is created to eventually replace the customary item. The new item is often referred to as being in "hard metric."

3.13 Hybrid metric item. An item designed and produced using both metric and inch-pound units even though it may be described by only one system of units in standardization documents.

3.14 Hybrid specification. A hybrid specification is one in which some requirements are given in rounded, rational metric units, and other requirements are given in rounded, rational inch-pound units. Hybrid specifications are often required for use in new designs where existing usable components must interface in a metric system.

3.15 Inch-pound specification. Inch-pound specifications have requirements given in rounded, rational, inch-pound units, usually as a result of being originally developed in inch-pound. The magnitudes are meaningful and practical (for example, 1 ounce, not 28.3495 grams). Inch-pound specifications should include those with rounded, rational, inch-pound units only (any needed metric unit conversions should be in conformance with 4.11.2). NOTE: There have been instances where magnitudes expressed in metric units as a result of mathematical conversion from rounded, rational, inch-pound units are given first (preferred units) with the rounded, rational inch-pound units given in parenthesis or in a non-preferred position. These specifications are inch-pound documents. Inch-pound specifications are developed for items to interface or operate with other inch-pound items.

3.16 Interchangeable item. An item which possesses such functional and physical characteristics as to be equivalent in performance, reliability, and maintainability, to another item of similar or identical purposes; and is capable of being exchanged for the other item without selection for fit or performance, and without alteration of the items themselves or of adjoining items, except for adjustment.

3.17 Interim amendment. An interim amendment is a limited coordination amendment to a coordinated specification required by a single activity, Military Department, or Defense Agency to meet a need when time does not permit preparation of a coordinated amendment.

3.18 Interim revision. An interim revision is a limited coordination revision to a coordinated specification required by a single activity, Military Department, or Defense Agency to meet a need when time does not permit preparation of a coordinated revision.

3.19 Limited coordination specification. A limited coordination specification covers items of interest to a single activity, Military Department, or Defense Agency, and is prepared to meet the acquisition needs of that activity, department, or agency.

3.20 Lot or batch. A collection of units of product from which a sample is to be drawn and inspected to determine conformance with the acceptability criteria and may differ from a collection of units designated as a lot or batch for other purposes.

3.21 Measurement sensitive specification. A measurement sensitive document is one in which application of the requirements depends substantially on some measured quantity (for example, the document contains requirements for dimensions which are critical to the interfacing of the item).

3.22 Metric specification. Metric specifications have requirements given in rounded, rational, metric units, usually as a result of being originally developed in metric. The magnitudes expressed are meaningful and practical (for example, 10 grams, not 0.35273 ounces). Documents containing only electrical units which are used in both the metric and inch-pound systems (for example, volts, amps, and ohms) are classified as metric documents. Documents also containing dimensional interfaces must have these interfaces in metric sizes to be classed as metric documents. Metric specifications are developed for items to interface or operate with other metric items.

3.23 Metric units. Metric units are a system of basic measures defined by the International System of Units based on "Le Systeme International d'Unites (SI)," of the International Bureau of Weights and Measures. These units are described in IEEE 268.

3.24 Metricalion. Metricalion is the process of changing to the metric system, including the act of developing metric standardization documents or converting current standardization documents to metric units of measurement.

3.25 Non-Government standard. A standardization document developed by a private sector association, organization, or technical society which plans, develops, establishes, or coordinates standards, specifications, handbooks, or related documents. The term does not include standards of individual companies. Non-Government standards adopted by the DoD are listed in the DoDISS.

3.26 Not measurement sensitive specification. A not measurement sensitive specification is one in which application of the requirements does not depend substantially on some measured quantity. This type of specification can be used with either a metric system or an inch-pound system.

3.27 Packaging. The processes and procedures used to protect material from deterioration, damage, or both. It includes cleaning, drying, preserving, packing, marking, and unitization.

3.28 Part or Identifying Number (PIN). A Part or Identifying Number (PIN) is an alpha-numeric designator which identifies parts, items, or bulk materials that are covered by a specification.

3.29 Performance specification. A specification that states requirements in terms of the required results with criteria for verifying compliance, but without stating the methods for achieving the required results. A performance specification defines the functional requirements for the item, the environment in which it must operate, and interface and interchangeability characteristics.

3.30 Qualification. A process in advance of and independent of an acquisition by which a manufacturer's capabilities, or a manufacturer's or distributor's products are examined, tested, and approved to be in conformance with specification requirements, and subsequent approval for or listing of products on a qualified products list (QPL) or manufacturers on a qualified manufacturers list (QML).

3.31 Recovered material. Waste materials and by-products that have been recovered or diverted from solid waste, but such term does not include those materials and by-products generated from, and commonly reused within, an original manufacturing process.

3.32 Recycled material. Product or other material recovered from the solid waste stream for use in the form of raw materials in the manufacture of new products other than fuel for producing heat or power by combustion.

3.33 Soft conversion. A soft conversion is the process of changing a measurement from inch-pound units to equivalent metric units within acceptable measurement tolerances without changing the physical configuration of the item.

3.34 Specification. A document prepared to support acquisition that describes essential technical requirements for materiel and the criteria for determining whether those requirements are met.

3.35 Specification sheet. The specification sheet is an abbreviated form of an associated specification, with the material presented in graphic or tabular format, not always requiring full sentences.

3.36 Standard sample. A representative sample, provided by, or as directed by, the acquisition activity to illustrate qualities or characteristics that cannot be readily described because test procedures or design data are not available, or because certain qualities and characteristics cannot be definitely expressed, such as the texture of fur, color of cloth, or the grain of wood.

3.37 Standardization document. As used in this standard, standardization document is a generic term that includes all the documents covered by this standard.

3.38 Style. This term is used to denote differences in design or appearance.

3.39 Supplement. A listing of associated specifications, specification sheets, or MS sheets associated with a general specification.

3.40 Tailoring. The process by which individual requirements (sections, paragraphs, or sentences) of the selected specifications, standards, and related documents are evaluated to determine the extent to which they are most suitable for a specific system and equipment acquisition and the modification of these requirements to ensure that each achieves an optimal balance between operational needs and cost.

3.41 Technical manual specification. A specification used to acquire technical manuals for the installation, operation, maintenance, training, and support of weapon systems, weapon systems components, and support equipment. Technical manual specifications do not require the preparation of DIDs, but are listed in the AMSDL.

3.42 Type. This term implies differences in like items or processes relative to design model, shape, or other configuration and is usually designated by Roman numerals, such as "type I" or "type II."

4. GENERAL REQUIREMENTS

4.1 General. This section covers general aspects of style, format, and general requirements for preparing a six-section specification. This includes arrangement of contents, paragraphing, numbering, heading, and notes. See figure 1 for a checklist that may be used as a guide in preparation of a specification, and figure 2 for a list of standard paragraphs that are always required or required when applicable.

4.2 Coverage. A specification shall be prepared to describe essential technical requirements for purchasing materiel. Similar items shall be covered in a single specification to the maximum extent practical. Specifications shall describe the item in a manner which encourages maximum competition. To the greatest extent possible, specification requirements shall be written so that commercial products or processes may be used to meet the requirement. Performance specifications shall be developed instead of detail specifications, whenever possible. (See 5.3.3.3 and 5.3.3.4 for a discussion on the differences between performance and detail specifications.)

4.2.1 Tailoring of requirements. Specifications shall be written and structured so that referenced documents, requirements, and verification provisions can be readily tailored to suit different applications. For detailed guidance on how to apply and tailor specifications, see MIL-HDBK-248.

4.3 Data requirements. Specifications shall not contain requirements for the development, preparation, acquisition of rights, submission, delivery, maintenance, updating, approval, or distribution of plans, reports, drawings, manuals, and other data products. Data can only be required in the contract. Only data product and technical manuals specifications (see 3.8 and 3.41) shall contain content and format requirements for data products. DIDs shall not be included in any section of a technical manual specification or a specification for equipments, assemblies, components, parts, materials, or any other type of commodity. Only data product specifications shall list the DIDs for which they are the source documents in section 6.

4.3.1 Data product specifications. Data product specifications shall have an AMSC number assigned by the AMSDL Clearance Office listed in the SD-1. The information specified in 5.3.6.5 shall be included in section 6 of the specification to indicate the DIDs that must be included in the contract to acquire the data product defined in the specification. The DIDs for which the specification serves as a source document shall be listed in section 6 of the specification (see 5.3.6.5).

4.3.2 Technical manual specifications. Technical manual specifications shall have an AMSC number assigned by the AMSDL Clearance Office listed in the SD-1. The information specified in 5.3.6.6 shall be included in section 6 of the specification to indicate the proper contractual method of acquiring the technical manuals.

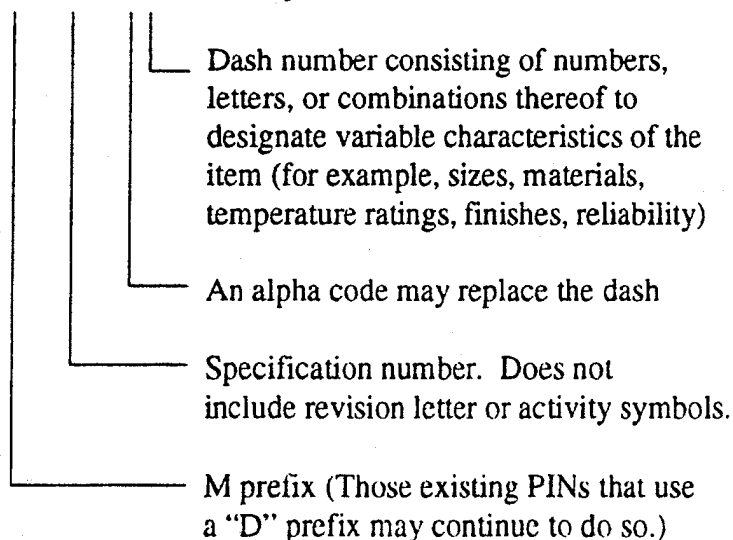
4.3.3 Qualification data. Specifications shall not contain data required for qualification or qualification retention. The qualifying activity shall request data associated with qualification or qualification retention from contractors upon application for qualification or qualification retention.

4.3.4 Use of copyright or patent material. Copyright or patent material shall not be included in a specification without the prior consent of the copyright or patent owner. When such consent is obtainable, a credit line, if requested by the copyright or patent owner, shall be placed in the specification close to the material involved.

4.4 Part or Identifying Number (PIN). When a specification covers more than one part, item, or material that is subject to assignment of National Stock Numbers and an identification problem in the Federal Supply System may result, a specification-based PIN to identify the parts, items, or materials shall be included. If a PIN is needed, its construction shall be provided by the DoD activity requiring it. PINs shall be kept short and shall not exceed 15 characters. If it is considered that such a limitation cannot be adhered to, the preparing activity must submit a proposed deviation with detailed justification to its DepSO for approval. PINs shall be uniform for all parts covered by the same specification. Uniformity is also preferred for all PINs within the same group of closely related items. PINs for material shall be assigned in the same product increments as the items to be stocked, and shall specify the various commercially available sizes and other sizes, as needed. PINs for specifications where a part numbering system is already in use do not have to comply with the structure given below; however, the adoption of a PIN should be considered upon revision of such specifications. When using interim documents, the "00" prefix shall not be included as a part of the PIN.

- a. The part numbering system shall be as follows, except as noted in item b. below:

M 12345 - 1 Example of PIN: M12345-1

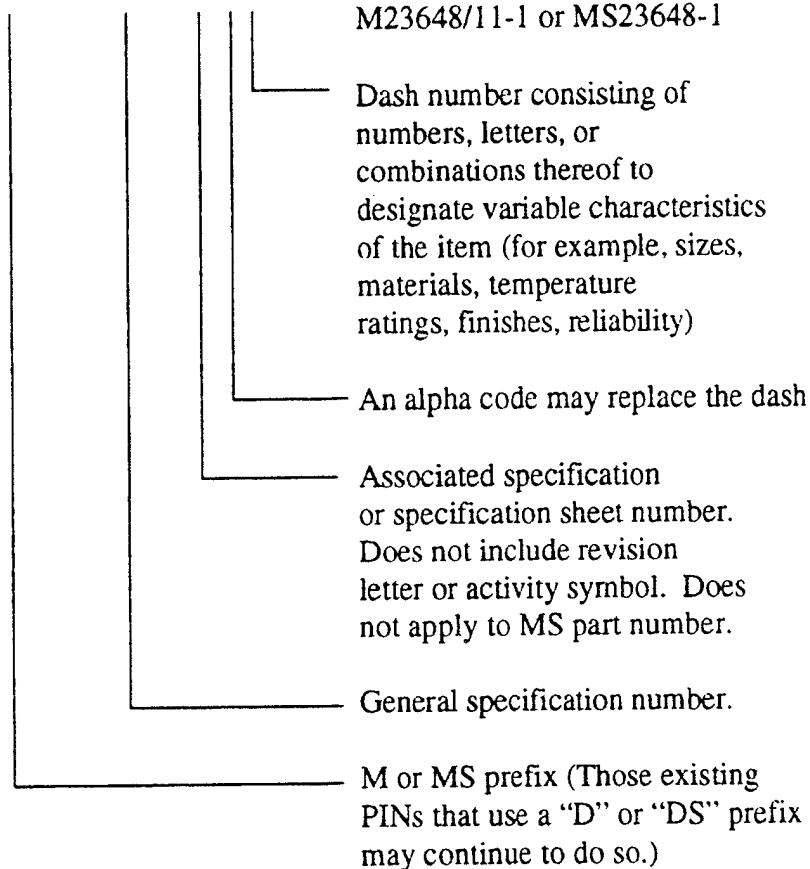


For associated specifications or specification sheets, the PIN shall be as follows:

M or MS 23648/ 11 - 1

Example of PIN:

M23648/11-1 or MS23648-1



4.5 Type designations. If practicable and a definite need has been established, type designations may be used to supplement basic item names in titles of specifications. When used, they shall be standardized for a category of equipment, such as communication, electronic, photographic, aeronautical support, aircraft, missiles, engines (rocket, reciprocating aircraft), and trucks. Only one type designation shall be assigned for items or equipment physically and functionally interchangeable. Type designations shall not be used for the purpose of assigning a PIN to components and parts. They shall be used for designating the class, grade, or type of an item or equipment for specification purposes only. Existing specifications using type designations shall not be amended for the sole purpose of deleting type designations.

4.6 Systems for type designations. In standardizing type designations, industrial or commercial systems of designations which have industry wide acceptance and which are acceptable for military use without modification shall be adopted without establishing military type designations. In the absence of existing widely accepted type designations, the specification shall establish the methods or systems of type designations and the methods and procedures for assigning them in a category of items or equipment.

4.7 Contractual and administrative requirements. A specification shall not include contractual requirements which are properly a part of the contract, such as cost, quantity required, time or place of delivery, methods of payment, liquidated damages, rework, repair, resubmittal, contract quality requirements, packaging, requirements for preparation, submission, delivery, approval, and distribution of data, record keeping, and actions to be taken by the Government for accepting nonconforming material. Contractual, administrative, and warranty provisions shall not be made part of the requirements in the specification. Contractual and administrative provisions considered essential for acquisition may be included in section 6 of the specification for information. The specification also shall not prescribe mandatory requirements or instructions for the Government Contract Administration Office. These include directions relating to quality assurance functions such as inspections, audits, reviews, certifications, and technical approvals.

4.8 Classified material. Specifications are working documents and shall be designed to avoid unnecessary restrictions in their dissemination. Specifications containing classified information shall be appropriately marked and handled in accordance with security regulations. The title of standardization documents shall not be classified.

4.9 Text. The text shall be written in clear and simple language, free of vague terms or those subject to misinterpretation. Unfamiliar words, words having more than one meaning, and unusual technical and trade expressions shall be avoided. Sentences shall be short. Punctuation shall be used to aid in reading and prevent misreading. Well-planned word order requires a minimum of punctuation. When extensive punctuation appears necessary for clarity, consideration should be given to revising the sentence, since misplaced or omitted punctuation marks can sometimes change the meaning of the sentence completely. To avoid this possibility, consideration should be given to converting clauses of a compound sentence into separate sentences. All sentences shall be completed and in accordance with the rules of grammar.

4.9.1 Grammar and style. Except where Department of Defense requirements differ, the United States Government Printing Office Style Manual shall be used as a guide for capitalization, spelling, punctuation, syllabification, compounding words, tabular work, and other elements of grammar and style.

4.9.2 Abbreviations. Abbreviations shall be in accordance with MIL-STD-12, where applicable. Abbreviations not covered by MIL-STD-12 shall be in accordance with the GPO Style Manual. The first time an abbreviation is used in text, it shall be placed in parentheses and shall be preceded by the word or term spelled out in full: for example, circuit (ckt), frequency converter (freq conv), maximum working pressure (mwp). The rule shall not apply to abbreviations used for the first time in tables and equations. Abbreviations used in figures and tables, but not referenced in the text or in any other portion of the specification, shall be spelled out in a footnote to the applicable figure or table.

4.9.3 Acronyms. The first time an acronym is used in text, it shall be placed in parentheses and shall be preceded by the word or term spelled out in full: for example, North Atlantic Treaty Organization (NATO). The rule does not apply to acronyms used for the first time in tables and equations. Acronyms used in figures and tables, but not referenced in the text or in any other portion of

the specification, shall be spelled out in a footnote to the applicable figure or table. A complete list of acronyms may also be included in section 6 of the specification.

4.9.4 Symbols. The only symbols normally used in text are "+", "-", "±", to express ranges or tolerances, the degree symbol "°", and metric symbols, such as "mm" and "mg". Other symbols may be used in equations and tables and shall be in accordance with IEEE 260. Graphic symbols, when used in figures, shall be in accordance with DoD adopted or accepted standards. Any symbol formed by a single character should be avoided if practicable, since an error destroys the intended meaning. Metric symbols need not be spelled out. The symbols for physical quantities (both metric and inch-pounds), often thought of as abbreviations, may be used in accordance with FED-STD-376.

4.9.5 Proprietary names. Trade names, copyrighted names, or other proprietary names applying exclusively to the product of one company shall not be used unless the item(s) cannot be adequately described because of the technical involvement, construction, or composition. In such instances, one, and if possible, several commercial products shall be included, followed by the words "or equal" and a description of required salient features or particular characteristics to ensure wider competition and that bidding will not be limited to the particular make specified. The same applies to manufacturer's part numbers or drawing numbers for minor parts when it is impracticable to specify the exact requirements in the specification. The salient features or particular characteristics required to define "or equal" shall be included. The use of "brand name or equal" is discouraged but, when determined to be necessary, shall be supported by written justification and retained in the permanent document file.

4.9.6 Commonly used words and phrases. Certain words and phrases are frequently used in a specification. The following rules shall be applied:

a. Referenced documents shall be cited thus:

- (1) "conforming to ..."
- (2) "as specified in ..."
- (3) "in accordance with ..."

In any case, use the same wording throughout a given document and a series of directly related documents.

b. "Unless otherwise specified" shall be used to indicate an alternative course of action. The phrase shall always come at the beginning of the sentence, and, if possible, at the beginning of the paragraph. This phrase shall be used only when it is possible to clarify its meaning by providing a reference, such as to section 6 of the specification, for further clarification in the contract or reference to another paragraph in the specification.

c. When making reference to a requirement in the specification and the requirement referenced is rather obvious or not difficult to locate, the simple phrase "as specified herein" is sufficient and may be used.

d. The phrase "to determine compliance with" or "to determine conformance to" should be used in place of "to determine compliance to." In any case, use the same wording throughout.

e. In stating limitation, the phrase shall be stated thus: "The diameter shall be not greater than ..." for the upper limit, or "The diameter shall be not less than ..." for the lower limit.

f. Capitalize the words "drawing" and "bulletin" only when they are used immediately preceding the document identifier. However, specifications, standards, and handbooks shall be identified in the text only by their document identifier; thus, MIL-E-000 (not: "specification MIL-E-000").

g. Use the following prepositional phrases when referencing figure and table information: "on a figure" or "in a table".

h. "Shall", the emphatic form of the verb, shall be used throughout sections 3, 4, and 5 of the specification whenever a requirement is intended to express a provision that is binding. For example, in the requirements section, state that "The gauge shall indicate . . ." and in the test section, "The indicator shall be turned to zero, and 220 volts of alternating current shall be applied." For specific test procedures, the imperative form may be used, provided the entire method is preceded by "The following test shall be performed" or similar wording. Thus, "Turn the indicator to zero and apply 220 volts of alternating current." "Shall" shall not appear in sections 1, 2, or 6 of the specification.

i. "Will" may be used to express a declaration of purpose on the part of the Government. It may be necessary to use "will" in cases when simple futurity is required.

j. Use "should" and "may" whenever it is necessary to express nonmandatory provisions.

k. "Must" shall not be used to express a mandatory provision. Use the term "shall."

l. Indefinite terms, such as "and/or," "suitable," "adequate," "first rate," and "best possible" shall not be used. Use of "e.g.," "etc.," and "i.e.," should be avoided.

m. The term "flammable" shall be used in lieu of "inflammable," and "nonflammable" shall be used in lieu of "unflammable" and "noninflammable."

4.10 Use of decimals. Decimals shall be used in documents instead of fractions wherever possible.

4.11 Metric practices. Metric practices shall conform to IEEE 268. When an existing inch-pound (or non-SI metric) standardization document is revised, a decision shall be made as to whether metrication is appropriate, and if so, how to metricate such a document. In general, the following methods shall be used:

a. New parallel document. For complex documents filled with many conversion-susceptible measurements, the logical method is to issue a new SI metric standardization document following the guidance herein. Great care shall be used to ensure that the new document is hard metric, and that equivalents are carefully selected. After that, the basic document and the metric document would be revised concurrently, until such time as the inch-pound document is no longer required and is canceled.

b. Metric appendix. For less complex documents, or for very complex documents where retention of the original document number is considered necessary, a hard metric appendix may be prepared. The basic document would remain in inch-pound units and refer to the appendix for metric information. The appendix shall refer to the basic document for technical features and cite only the metric equivalents, exercising care to ensure that equivalents are carefully selected.

c. Metric notes. For relatively simple documents with only a few measurement units, metrication may be handled by appropriate notes or by one or more footnotes.

4.11.1 Metric Units. The metric units for commonly used quantities shall be in accordance with FED-STD-376. Optimum rationalization shall be achieved in the preparation of standardization documents. Metric sizes will generally be expressed in whole numbers. There shall be no soft conversion of units merely for the sake of conversion. In those instances where an inch-pound item is the primary item in the international marketplace, a document with soft conversion of units can be prepared.

4.11.2 Dual dimensions. The use of both metric and inch-pound measurements on drawings or other pictorial illustrations to be used in a standardization document should be avoided. The use of tables to translate the specific inch-pound units used to metric equivalents is acceptable. For text material, when preference is given in the standardization document to inch-pound units, acceptable metric units may be shown in parentheses. When preference is given to metric units, inch-pound units may be omitted or included in parentheses. In general, where it has long been standard practice to cite metric units alone (such as citing temperatures only in degrees Celsius), inch-pound equivalents may be omitted. A specific repetitive equivalent, for example 1.00 inch (25.4 mm), need be inserted only the first time it appears in a paragraph of a standardization document.

4.12 Underlining. Portions of paragraphs shall not be underlined and words or phrases shall not be capitalized for the sake of emphasis with the exceptions noted in 4.13.1. All of the requirements are important in obtaining the desired product or service. Preambles and acquisition notes shall not be underlined. Table and figure titles may be underlined (see 4.15.1 and 4.16.1).

4.13 Paragraph numbering. Each paragraph and subparagraph shall be numbered consecutively within each section of the specification, using a period to separate the number representing each breakdown.

Example for section 3 of commodities specification:

Requirements	3
First paragraph	3.1
First subparagraph	3.1.1
Second paragraph	3.2
First subparagraph	3.2.1
Second subparagraph	3.2.2

Itemization within a paragraph or subparagraph shall be identified by lower-case letters followed by a period to avoid confusion with paragraph numbers. For clarity of text, paragraph numbering should be limited to three sublevels, unless additional sublevels are unavoidable.

4.13.1 Paragraph identification. Each paragraph and subparagraph shall be given a subject identification. The first letter of the first word in the paragraph and subparagraph identification shall be capitalized. Paragraph and subparagraph identifications shall be either underlined, italicized, or bold type.

4.14 Specification identifier and page number. The specification identifier shall be placed on each page, at the upper right corner of the first page and at the upper center of each successive page. On all specifications, except specification sheets, all pages except the first page shall be numbered with consecutive Arabic numbers at the bottom center of each page. On fold-out pages and other pages which must unavoidably be left blank, the page before the blank page shall be numbered with both page numbers, for example, 23/24. Information for page numbering specification sheets is shown in 5.12.7; for amendments in 5.9.13; and for supplements in 5.8.7.

4.15 Tables. A table shall be used when information can thus be presented more clearly than in text. Elaborate or complicated tables shall be avoided. References in the text shall be sufficiently detailed to make the purpose of the table clear. The table shall be restricted to information pertinent to the associated text. The tables shall be placed immediately following or within the paragraph containing the first reference. If space does not permit, the table may be placed on the following page. If tables are numerous or their location would interfere with correct sequencing of paragraphs and cause difficulty in understanding or interpretation, they may be placed in numerical order at the end of the specification and before any figures, appendix, or index. Information included in tables shall not be repeated in the text.

4.15.1 Table numbering and title. All tables shall be numbered consecutively throughout the document with Roman numerals in the order of their reference in the text, even if only one table appears in the document, and shall be titled. The word "TABLE" shall be in full capitalization, followed by the Roman numeral and a period followed by the underlined, italicized, or bold faced title. The first letter of the title shall be capitalized. Table titles shall be centered above the table and shall be on the same line with the table number. If the title is too long to be typed on one line, the second line shall be aligned with the first letter of the title. If a listing or tabulation appears within a paragraph as an integral part of that paragraph, and obviously does not require a title, the listing or tabulation need not be titled.

4.15.2 Table format. Tables shall be boxed in and ruled horizontally and vertically as necessary to ensure clarity of the table contents. Lines may be typed or drawn. The contents of a table shall be organized and arranged to show clearly the significance and relationship of the information. If a table is of such width that it would be impractical to place it in its normal vertical position, it may be rotated counterclockwise 90 degrees. Large tables may be divided and, if possible, printed on facing pages.

4.15.3 Continuation of tables. If a table is continued to additional page(s), a horizontal line shall not be drawn at the end of the page, unless the table is a group or method type that requires a line of separation between the groups. When lengthy group testing is being documented, the group shall not be split and carried to the next page. The entire group shall be completed on one page. When the table is continued to the next page, the title shall be repeated and a dash followed by the word "Continued" at the end of the title; for example, "TABLE II. Qualification inspection - Continued." The entire heading shall be repeated at the top of the page on which the continuation is presented. The table shall be closed with a horizontal line when all information has been entered.

4.16 Figures. A figure shall be clearly related to, and consistent with, the text of the associated paragraph. Dimensioning practices for outline drawings shall comply with ASME Y14.5M. (Figures should not be confused with numbered and dated drawings which are discussed in 5.3.2.1.) The figures should be placed immediately following or within the paragraph containing the first reference to the figure. If figures are numerous or their location would interfere with correct sequencing of paragraphs and cause difficulty in understanding or interpretation, they may be placed in numerical order at the end of the specification following any tables and before any appendix or index. If the figure is of such width that it would be impracticable to place it in its normal vertical position, it should be rotated counterclockwise 90 degrees.

4.16.1 Figure numbering and title. Figures shall be numbered consecutively throughout the document with Arabic numerals in the order of their reference in the text, even if only one figure is referenced in the document, and shall be titled. Figures added after the highest numbered figure are assigned the next higher Arabic numeral. The word "FIGURE" shall be in full capitalization, followed by the Arabic numeral, a period, and the underlined, italicized, or bold-faced title. Only the first letter of the title shall be capitalized. Figure titles shall be centered below the graphic and, if possible, shall be on the same line with the figure number. If the title of the figure is too long to be typed on one line, the second line shall be aligned with the first letter of the title.

4.16.2 Continuation of figures. Large figures may be broken and, if possible, printed on facing pages. When a figure is continued on the next page, the number and title shall be repeated below the figure with a dash followed by the word "Continued" at the end of the title.

4.17 Footnotes and notes. Footnotes and notes may be used as indicated below.

4.17.1 Footnotes to text. Footnotes to the text should be avoided. Their purpose is to convey additional information that is not properly a part of the text. A footnote to the text shall be placed at the bottom of the page containing the reference to it. Footnotes shall be consecutively numbered throughout the specification with Arabic numerals. The Arabic numeral shall also be used to identify the reference in the text.

4.17.2 Footnotes to tables. Footnotes may contain mandatory information that cannot be presented as data within a table. Number footnotes separately for each table as they appear in the table. Footnote numbers or symbols shall be placed immediately following a word and preceding a numeral requiring the footnote. Numbered footnotes are listed in order immediately below the table. Where numerals will lead to ambiguity (for example, in connection with a chemical formula), superscript letters, daggers, and other symbols may be used.

4.17.3 Notes to figures. Notes to figures are numbered separately from textual footnotes within the document. Drafting or dimensional notes are numbered consecutively and placed below the figure and above the title. The word "NOTES:" is typed in the left margin of the figure and the explanatory information is typed in Arabic number sequence under "NOTES." For example:

"NOTES:

1. Dimensions are in millimeters.
2. Inch-pound equivalents are given for information only."

4.18 Foldouts. Foldouts should be avoided since their use will require special printing and handling procedures, and distribution will be delayed. Whenever possible, lengthy tables should be reformatted as multiple, single page tables. When foldouts are required, they shall be grouped in one place, preferably at the end of the document (in the same location as figures) and suitable reference to their location shall be included in the text.

4.19 Definitions in specifications. Definitions shall be listed in alphabetical order in section 6. When this is done, a parenthetical phrase reference to the applicable paragraph in section 6 shall follow the terms to indicate the existence of a definition, for example, "(see 6._.)". Where standard definitions exist in DoD documents, the definition should be quoted word for word with a reference to the source.

4.20 Cross-reference. Cross-reference shall be used only to clarify the relationship of requirements within the specification and to avoid inconsistencies and unnecessary repetition. When the cross-reference is to a paragraph or subparagraph within the specification, the cross-reference shall be

only to the specific paragraph number. The word "paragraph" shall not appear, for example, "(see 3.1.1)".

4.21 References to other documents. Judicious referencing of other documents in specifications is a valuable tool that eliminates the repetition of requirements and tests adequately set forth elsewhere. However, unnecessary or untailored referencing of other documents can lead to increased costs, excessive tiering, ambiguities, and compliance with unneeded requirements. The following rules shall apply when referencing another document as a requirement in a specification and listing it in section 2 as an applicable document:

- a. If the information is less than a page and if it is not a violation of copyright provisions (see 4.3.4), it should be included directly into the specification without referencing another document.
- b. Referenced documents shall be current (not canceled or superseded), approved for use (not drafts), and readily available.
- c. Unless the entire referenced document applies, it shall not be cited in total, but shall be tailored by citing the appropriate sections of the document, such as specific types, grades, or classes; test methods; or definitive descriptions (for example, "the painting requirements of MIL-STD-000"). Do not reference specific paragraph, table, or figure numbers from other documents since revisions to these documents often result in renumbering.
- d. References shall not be made to the following types of documents:
 - (1) Directives, instructions, regulations, and other types of policy documents, except in section 6 for information only.
 - (2) Data Item Descriptions, except as allow by 4.3 and 5.3.6.5.
 - (3) Management, manufacturing, and process type documents that should be cited in contracts or program peculiar documents. A known list of these documents is identified in the SD-1, and these documents shall not be referenced. However, such a list can never be totally complete. Document preparers shall not reference any documents that do not comply with the intent of this restriction.
 - (4) Specifications, standards, drawings, or other documents that contain proprietary or unique design solutions that would restrict competition, or that would not be readily available to competing contractors because they are owned by a particular company.

4.22 Preparation of manuscripts for reproduction. Manuscripts shall be prepared for reproduction. The standardization document manuscript shall be typed, single spaced on one side only, on 8-1/2 x 11-inch plain white paper, with a margin of 1 inch at the sides, top, and bottom of the page. Bond paper (which has a watermark) shall not be used.

5. DETAILED REQUIREMENTS

5.1 General. This section contains detailed format requirements for preparing the sections of a specification as well as the associated documents, namely - supplement, amendment, notice, associated specification, and specification sheet.

5.2 First page information. Drafts of proposed specifications shall carry one of the following notes at the top of the first page, as applicable:

"NOTE: This draft, dated (date) prepared by (preparing activity), has not been approved and is subject to modification. DO NOT USE FOR ACQUISITION PURPOSES. (Project)"

"NOTE: This draft, dated (date) prepared by (name of agent), as agent for (preparing activity), has not been approved and is subject to modification. DO NOT USE FOR ACQUISITION PURPOSES. (Project)"

This note shall be removed from the camera ready master after approval and prior to reproduction.

5.2.1 Heading. Specifications shall have one of the following headings centered above the title:

- a. "PERFORMANCE SPECIFICATION" if the document meets the criteria specified in 5.3.3.3.
- b. "DETAIL SPECIFICATION" if the document meets the criteria specified in 5.3.3.4.

5.2.2 Specification titles. A specification title shall consist of a basic item name, Government type designator (when applicable), and sufficient modifiers to differentiate between similar specifications listed in the DoDISS. Duplication of specification titles is not permissible. Reference to major assemblies or end items shall be included in the title only to the extent necessary to distinguish between similar items.

5.2.2.1 Item names. Item names shall conform to Cataloging Handbook H6. Use of other than an approved item name in Cataloging Handbook H6 shall be on an agreed-upon basis between the cataloging organizations and the specification preparing activity.

5.2.2.2 General rules. The following rules shall apply to specification titles:

- a. Specification titles may be in two parts. The first part shall be an item name in accordance with 5.2.2.1. When required, the second part shall consist of those modifiers and Government type designators necessary to complete the item identification (see 5.2.2.4). The first part of the title shall be separated from the second part of the title by a dash. For example:

"SPRING, HELICAL COMPRESSION - RECOIL ADAPTER"
 { First part of title } { Second part of title }

b. Abbreviations shall not be used in the first part of the title. Abbreviations may be used in the second part of the title, and shall be in accordance with MIL-STD-12.

c. Specification titles shall not begin with numbers.

d. Specification titles shall be brief as possible, but constructed in such a way as to distinguish between similar items.

e. For general specifications, the word "GENERAL SPECIFICATION FOR" shall be the closing phrase of the title.

f. Trade mark or copyrighted names shall not be used in specification titles.

g. No word(s), symbol(s), or combination thereof that would disclose sensitive or classified information shall be used in specification titles.

5.2.2.3 First part of title. The first part of the title shall be one of the following in the listed order of preference.

a. An approved item name selected from Cataloging Handbook H6.

b. If an approved item name does not exist, the following procedures shall be followed:

(1) The basic name shall be a noun or noun phrase. Modifiers shall be included as required by 5.2.2.3.b.(8).

(2) This noun or noun phrase shall establish a basic concept of an item. A compound noun or noun phrase shall be used only when a single noun is not adequate to establish a basic concept of an item.

(3) The noun or noun phrase shall describe the part and the usage of the part, and not the material or method of fabrication.

(4) The noun or noun phrase shall be used in the singular form, except as follows:

(a) Where the only form of the noun is plural, such as in "TONGS."

(b) Where the nature of the item requires the plural form, such as in "GLOVES."

(c) When more than one product is covered by different classes, grades, types, sizes, or other classifications.

(5) An ambiguous noun, or one that designates several classes of items, shall not be used alone, but shall be used as part of a noun phrase. For example:

Acceptable

SLIDE RULE
SOLDERING IRON
CIRCUIT CARD ASSEMBLY
PRINTED WIRING BOARD
PRINTED CIRCUIT CARD

Unacceptable

RULE, SLIDE
IRON, SOLDERING
ASSEMBLY, CIRCUIT CARD
BOARD, PRINTED WIRING
CARD, PRINTED CIRCUIT

(6) When an item is not a container or material, but its name involves the use of a noun that ordinarily designates a container or material, a noun phrase shall be used as the basic name. For example:

Acceptable

JUNCTION BOX
CABLE DRUM
SOLDERING IRON

Unacceptable

BOX, JUNCTION
DRUM, CABLE
IRON, SOLDERING

(7) The following words shall never be used alone, but may be the last word of a noun phrase:

Apparatus	Equipment	Plant
Assembly	Group	Ship
Assortment	Installation	Subassembly
Attachment	Kit	Tackle
Compound	Machine	Tool
Device	Mechanism	Unit
Element	Outfit	Vehicle

EXCEPTION: In certain instances, some of the listed words may be used as the first word in a basic noun phrase, such as in "MACHINE SHOP" or "TOOL KIT."

(8) When the noun or noun phrase represents an item for which types, grades, or varieties are applicable, the remainder of the first part of the title shall consist of one or more modifiers.

(a) A modifier may be a single word or qualifying phrase. The first modifier shall serve to narrow the area of concept established by the basic name and succeeding modifiers must continue a narrowing of the item concept by expressing a different type of characteristic. A word directly qualifying a modifying word shall precede the word it qualifies, thereby forming a modifying phrase.

For example, "BRACKET, UTILITY LIGHT." The word "UTILITY" qualifies the word "LIGHT" and precedes it in the modifying phrase.

(b) A modifier shall be separated from the noun or noun phrase by a comma and from any preceding modifier by a comma.

(c) The conjunction "or" and preposition "for" shall not be used.

5.2.2.4 Second part of title. The second part of the title shall consist of such additional modifiers, modifying phrases, or Government type designators as are required. Modifiers indicating what an item is (its shape, structure, or form) or what the item does (its function) are preferable to modifiers indicating the application (what it is used for) or location of the item (where it is used).

5.2.3 Identification of specifications. Specifications shall be identified and dated as specified in the following paragraphs.

5.2.3.1 Identification of coordinated specifications. Coordinated specifications shall be identified by a specification identifier composed of the letters "MIL" followed by a hyphen; the letters "PRF" if it is a performance specification or "DTL" if it is a detail specification followed by a hyphen; and an Arabic number (see 4.14). This number is assigned by the preparing activity in accordance with departmental procedures from blocks of numbers allocated to the departments. For example, "MIL-PRF-123" for a coordinated performance specification, or "MIL-DTL-123" for a coordinated detail specification.

5.2.3.1.1 Identification of associated specification and specification sheets. Each associated specification or specification sheet shall be identified by the general specification identifier (less revision letter or suffix), followed by a slash and an additional number serially assigned to indicate its position in order of development. For example, "MIL-PRF-18/25" or "MIL-DTL-18/25."

5.2.3.1.2 Date of specification. The date of approval shall appear under the specification identifier on the first page only. Drafts shall not have a date in this location. The space shall be blank until the document is approved.

5.2.3.2 Identification of limited coordination specifications. Limited coordination specifications shall be identified in the same manner as coordinated specifications, except that a parenthetical suffix to the specification identifier containing the symbol designation of the preparing activity or service shall be added consistent with the degree of coordination of the document. Dates shall be assigned as for fully coordinated documents.

Examples: MIL-PRF-12345(ER)
23 April 1995

MIL-DTL-16878E(NAVY)
10 August 1995

5.2.3.3 Identification of interim specifications. An interim limited coordination specification bears the same title as the coordinated specification on which it is based (see 5.2.2). No more than one interim specification shall be outstanding for any coordinated specification. In addition, such a specification shall be clearly identified through four indicators as follows:

- a. The specification number shall be prefixed with two zeros.
- b. After the specification number, the next revision letter and the symbol designation of the preparing activity for the interim specification (see 5.7.4).
- c. The notation "USED IN LIEU OF" shall be used instead of "SUPERSEDING" in the supersession information (see example below).
- d. The preamble set forth on the first page of the specification, under the title (see 5.2.5.3).

Example: MIL-PRF-0015280C(SH)
 23 December 1995
 USED IN LIEU OF
 MIL-PRF-15280B
 19 August 1995

5.2.3.4 Measurement system identification. Metric specifications shall be identified by the word "METRIC" placed in a rectangular box above the specification identifier on the first page. Inch-pound specifications shall be identified in a similar manner, except the term "INCH-POUND" shall be used. Similarly, those specifications which can be used in either the metric or inch-pound systems shall be identified by "NOT MEASUREMENT SENSITIVE." Hybrid documents which include a mixture of metric and inch-pound units shall be identified by "INCH-POUND." The "DoD" symbol shall no longer be used to identify specifications which are metric or capable of being used in either measurement system. Those specifications presently identified as "DoD" shall be changed to the "MIL" identifier at the time of next revision.

Examples:

METRIC

MIL-PRF-123

NOT MEASUREMENT SENSITIVE

MIL-PRF-123

INCH-POUND

MIL-PRF-123

5.2.4 Supersession. A coordinated standardization document supersedes all prior issues, revisions, and amendments of that document. With concurrence of the military or federal agencies concerned, other documents may also be superseded by a coordinated document which incorporates essential requirements. Thus, the superseding document reflects a degree or range of coordination equal to or greater than any document which it supersedes. An interim specification shall not include the term "SUPERSEDING" with respect to an existing coordinated specification, since coordinated documents remain in effect until canceled or revised with the concurrence of the agencies concerned. A line shall separate the number and date of the superseding document from the supersession data. The word "SUPERSEDING" shall be entered below the separation line, followed by the number and date of the superseded document, indicating that all activities concerned are to use the superseding document.

For example:

MIL-DTL-12345B
11 August 1995
 SUPERSEDING
 MIL-DTL-0012345A(SH)
 6 June 1995
 MIL-C-12345
 16 March 1966
 MIL-E-56789B
 20 January 1970

When more than three documents are superseded, or when a specification is superseded in part, or when it is desirable to present special information for clarity, the supersession data and special information shall be placed in section 6 of the specification. The following notation shall then appear under or in lieu of supersession:

Example:

Superseding more than
three documents:

MIL-DTL-123C
20 August 1972
 SUPERSEDING
 (See 6._)

Superseding in
part:

MIL-PRF-120C
20 August 1995
 SUPERSEDING
 MIL-A-12345C (IN PART)
 4 January 1970
 (See 6._)

When a specification supersedes a document of a different number, the cancellation notice for the superseded document should be processed for issuance simultaneously with the superseding document. The approval dates of the superseding specification and of the cancellation notice should be the same.

MIL-STD-961D

5.2.4.1 "Inactive for new design" note. When specifications are made inactive for new design concurrent with a revision action, the following note shall appear below the title and above the preamble on the first page and be boxed for emphasis. Superseding documents for new design shall be noted in the box when applicable.

Inactive for new design after For new design use MIL-PRF-000.	(date)
--	--------

5.2.5 Preambles.

5.2.5.1 Preamble for coordinated specifications. For coordinated specifications, the following preamble shall appear immediately under the title to show promulgation by the Department of Defense:

"This specification is approved for use by all Departments and Agencies of the Department of Defense."

5.2.5.2 Preambles for limited coordination specifications. For limited coordination specifications, one of the following preambles, as appropriate, shall appear immediately under the title:

"This specification is approved for use by the (Preparing Activity), Department of the (), and is available for use by all Departments and Agencies of the Department of Defense."

"This specification is approved for use by the Department of the () and is available for use by all Departments and Agencies of the Department of Defense."

5.2.5.3 Preamble for interim specifications. For interim specifications, the following preamble shall appear immediately under the title:

"This specification is approved for interim use by the (Preparing Activity) in lieu of the coordinated issue of (document identifier)."

5.2.5.4 Preamble for specifications with restricted distribution. When a specification is marked with other than "DISTRIBUTION STATEMENT A" (see 5.2.9), the following shall be added at the end of the appropriate preamble: "within the distribution limitations noted at the bottom of the page."

5.2.6 DD Form 1426 note. Specifications in six-section format shall include the following note on the bottom center of the first page immediately above the FSC designation. The note shall be boxed for emphasis.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: (insert name and address of the preparing activity) by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

5.2.7 Designation of federal supply class (FSC), group (FSG), or area assignment. The specification shall be assigned a FSC or FSG as defined in the Cataloging Handbook H2-1, Part 1, or a standardization area as defined in the SD-1. The applicable FSC, FSG, or area assignment shall appear in the lower right corner of the first page of the specification below the beneficial comments box. The symbol "GP" shall follow the FSG number, (for example, 59GP) when the FSG number identifies the assignment or project. Specifications covering more than one FSC shall be designated with the applicable FSG or with the appropriate standardization area if more than one FSG is covered. Dual or multiple FSC, FSG, or standardization area designations shall not be used.

5.2.8 AMSC number. All standardization documents shall reflect either an AMSC number or "AMSC N/A" at the bottom left of the first page, below the beneficial comments box. The following indicates which documents require an AMSC number and which ones require "AMSC N/A."

- a. With the exceptions noted in b. and c. below, specifications shall be marked "AMSC N/A."
- b. Data product specifications require assignment of an AMSC number (see 4.3.1).
- c. Technical manual specifications require assignment of an AMSC number (see 4.3.2).
- d. Amendments require either the same AMSC number or "AMSC N/A" as shown on the document being amended. While amendments do not require clearance, a copy of all amendments bearing an AMSC number shall be sent to the AMSDL Clearance Office concurrent with submittal of the manuscript to the DoDSSP for printing.
- e. Validation notices, cancellation notices, reinstatement notices, inactive for new design notices, and supplements require "AMSC N/A."

5.2.9 Distribution statement. All standardization documents prepared by the DoD will cite the appropriate distribution statement in accordance with MIL-STD-1806 on the line immediately below the FSC, FSG, or area designation flush with the left hand margin. The distribution statement shall be placed on all coordination drafts, as well as the camera ready copy of the document. Since most specifications do not contain sensitive technical information, the following distribution statement is the one that will usually be used:

"DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited."

5.3 Sectional arrangement of specifications. Except for specification sheets (see 5.12), specifications shall contain six numbered sections, titled and numbered as shown below. A table of contents and cover sheet shall not be used. For lengthy documents, an alphabetical index may be used (see 5.6).

1. SCOPE
2. APPLICABLE DOCUMENTS
3. REQUIREMENTS
4. VERIFICATION
5. PACKAGING
6. NOTES

Subject matter shall be kept within the scope of the sections so that the same kind of requirements or information will always appear in the same section of every specification. If there is no information pertinent to a section, the following shall appear below the section heading:

"This section is not applicable to this specification."

5.3.1 SECTION 1.

5.3.1.1 Scope. The statement of the scope shall repeat the item name and its modifiers and consist of a clear, concise abstract of the coverage of the specification and may include, whenever necessary, information as to the use of the item other than specific detailed applications covered under "Intended use" (section 6). This brief statement shall be the beginning paragraph in section 1 of the six-section specification. As applicable, reference may be made to information contained in section 6 (see figure 3). The scope shall not contain requirements. Figures shall not be included in the scope.

5.3.1.2 Classification. Designation of classification such as types, grades, and classes, when applicable, shall be listed under this heading in section 1 and shall be in accordance with accepted industry practice. The same designation shall be used throughout the specification. When more than one type, grade, class, or other classification is listed, each shall be briefly defined. When only one classification is covered, a statement to this effect shall be included in the scope paragraph, and the classification paragraph omitted. The classification shall remain constant from revision to revision of the specification unless a change is necessitated by a valid reason, such as a change in industry practice. Where the characteristics of an item change enough to affect interchangeability, delete the original designation and add a new classification. Whenever it becomes necessary to change the designation without changing the characteristics of the item, a cross reference shall be included in section 6 of the same specification indicating the relationship between the old and new designations. This cross-reference shall remain in section 6 in all successive revisions identifying designations in all revisions since the original designation change. Since such changes require cataloging and other record changes, such changes shall be kept to a minimum.

5.3.1.2.1 Other classifications. If the terms, types, grades, and classes do not serve accurately to classify the differences as indicated above, other terms such as color, form, weight, size, power supply, temperature rating, condition, unit, enclosure, rating, duty, insulation, kind, and variety may be used.

5.3.1.2.2 Classification for reliability level identification. When a specification contains a multilevel reliability requirement, section 1 of the specification shall identify the levels covered.

5.3.1.2.3 Use of international standardization agreement code numbers. In designating the classification, the appropriate NATO or other international standardization agreement code numbers shall be included in section 1 whenever the specification requirements are consistent with such an agreement.

5.3.2 SECTION 2.

5.3.2.1 Listing of applicable documents. Section 2 shall list only those documents referenced in sections 3 or 4 of the specification that are needed to meet requirements or provide useful information for meeting requirements (see figure 4). If a document is only cited as an example or for background information, it does not have to be listed in section 2. For the types of documents that may be referenced in specifications, see 4.21. Figures bound integrally with the specification shall not be listed in section 2 unless they are reduced-size copies of drawings provided in the specification for information only and use of the full size drawings is normally required with the specification. The first paragraph in section 2 shall be as follows:

"2.1 General. The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements documents cited in sections 3 and 4 of this specification, whether or not they are listed."

5.3.2.1.1 Government documents. Referenced Government specifications, standards, and handbooks shall be listed by document title and identifier, excluding revision letters, suffix (preparing activity symbols), and the "OO" designation for interim documents. Titles shall be taken from the documents rather than an index. Government specifications, standards, handbooks, drawings, and publications as applicable shall be listed numerically (except federal specifications which shall be listed alpha-numerically) under headings in individual groups such as federal, Department of Defense, and departmental activity (such as Naval Air Systems Command). These listings shall be included under the following subparagraphs:

"2.2 Government documents.

"2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation (see 6.2)."

The following types of publications shall be listed (as applicable) in the order shown after 2.2.1:

- Federal Specifications (list CIDs under this heading)
- Department of Defense Specifications
- Federal Standards
- Federal Information Processing Standards
- Department of Defense Standards
- Department of Defense Handbooks

If a general specification has associated specifications or specification sheets (including MS sheets) not exceeding five in number, these specifications shall be listed by exact title in numerical sequence. For specifications having six or more associated specifications, specification sheets, or MS sheets, the supplement shall be identified by one of the following notes in 2.2.1 following the Department of Defense specification listing (see 5.8).

"(See supplement 1 for list of associated specifications.)"

"(See supplement 1 for list of specification sheets.)"

The following parenthetical source statement shall follow the listing of Government specifications, standards, and handbooks:

"(Unless otherwise indicated, copies of the above specifications, standards, and handbooks are available from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)"

If Federal Information Processing Standards (FIPS) are listed under 2.2.1, the following parenthetical source statement shall also appear:

"(Copies of the Federal Information Processing Standards (FIPS) are available to Department of Defense activities from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094. Others must request copies of FIPS from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161-2171.)"

The following paragraph shall be used to list Government drawings, publications, or other Government documents not listed under 2.2.1:

"2.2.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation."

The following types of publications shall be listed (as applicable) in the order shown after 2.2.2:

Other Government Documents (for example, Department of Transportation Specifications, U.S. Department of Agriculture Specifications, etc.)

Drawings

Publications

Where detailed drawings referred to in a specification are listed in an assembly drawing, it is only necessary to list the assembly drawing.

A parenthetical source statement shall follow each individual document or each group of related documents providing the name and address of the source.

5.3.2.1.2 Non-Government standards and other publications. Non-Government standards and other publications not normally furnished by the Government shall be listed in appropriate order (numerically or alpha-numeric) under the headings of the respective non-Government standards bodies. The document(s) shall be listed by title and identifier, if applicable. Titles shall be taken from the document rather than from an index. If the non-Government standard has been adopted by the DoD and listed in the DoDISS, the specific issue date or other revision indicator shall not be given. After the title of each non-Government standard adopted by the DoD, add "(DoD adopted)." If the non-Government standard has not been adopted by the DoD, the specific issue date or other revision indicator may be given, but it is not required. This listing shall be included under the following subparagraph:

"2.3 Non-Government publications. The following document(s) form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted are those listed in the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS are the issues of the documents cited in the solicitation (see 6.2)."

In addition, the following parenthetical source statement shall follow each individual publication or each group of related publications which may be obtained from a common source:

"(Application for copies should be addressed to the (name and address of the source).)"

5.3.2.1.3 Order of precedence. In order to avoid confusion in the possible conflict between the requirements of the specification and the documents referenced therein, the following statement shall be included:

"2.4 Order of precedence. In the event of a conflict between the text of this document and the references cited herein (except for related associated specifications or specification sheets), the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained."

The parenthetical phrase "(except for related associated specifications, specification sheets, or MS standards)" shall be omitted from the above paragraph for specifications which do not have related associated specifications or specification sheets.

5.3.3. Section 3

5.3.3.1 Requirements. Section 3 of the specification shall state the necessary requirements for the product for which the specification is prepared. Figure 1 lists some possible requirements to be considered when preparing a specification.

5.3.3.2 General principles. The following general principles shall govern requirements for performance specifications and detail specifications:

- a. Requirements shall represent the actual essential needs of the Government.
- b. Requirements shall be described in a manner to encourage competition.
- c. Requirements shall be clear and provide a definite basis for rejection or firm criteria for acceptance based on testing or examination.

5.3.3.3 Performance specifications. Requirements in performance specifications shall describe what is required or the item's form, fit, or function. Performance specifications shall not describe how a requirement is to be achieved, require the use of specific materials or parts, or give detailed design or construction requirements beyond those needed to ensure interchangeability with existing items. For a general specification to be designated as a "Performance Specification," the requirements in its associated specifications, specification sheets, or MS sheets shall also be stated as performance requirements. See figure 5 for an example of the types of requirements found in performance specifications.

5.3.3.4 Detail specifications. Detail specifications may consist of all detail requirements or a blend of performance and detail requirements. To the greatest extent possible, requirements in detail specifications shall be in terms of performance. Detail specifications shall specify materials, design or construction requirements, or "how to" requirements only to the extent necessary to ensure the adequacy, safety, and interchangeability of the item being acquired. See figure 6 for an example of the types of requirements found in detail specifications.

5.3.3.5 General specifications. When preparing a general specification, section 3 shall contain all the requirements that are common to the item being specified. Where specification sheets are to be prepared, the applicable general specification shall include the following paragraph in section 3:

"3.1 Specification sheets. The individual item requirements shall be as specified herein and in accordance with the applicable specification sheet. In the event of any conflict between the requirements of this specification and the specification sheet, the latter shall govern." (If a specific requirement specified herein is not required for an item, it shall be so indicated on the specification sheet; for example, "Shock - N/A.").

Use the terms "Associated specifications" or "MS sheets" in place of "Specification sheets" when applicable.

5.3.3.6 Qualification. For specifications where inclusion of a qualification requirement has been properly authorized, one of the following statements shall be included in section 3, as appropriate:

For QPLs:

"3. Qualification. (Item) furnished under this specification shall be products that are authorized by the qualifying activity for listing on the applicable qualified products list before contract award (see 4. and 6.)."

For QMLs:

"3. Qualification. (Item) furnished under this specification shall be products that are manufactured by a manufacturer authorized by the qualifying activity for listing on the applicable qualified manufacturers list before contract award (see 4. and 6.)."

5.3.3.7 First article. First article includes pre-production models, initial production samples, test samples, first lots, pilot models, and pilot lots. If it may be necessary to test a first article for conformance with specification requirements prior to regular production on a contract, the following statement shall appear in section 3:

"3. First article. When specified (see 6.2), a sample shall be subjected to first article inspection in accordance with 4._."

5.3.3.8 Standard sample. Use of standard samples shall be kept to a minimum, since their use can create problems in determining the acceptability of items subsequently produced. Adequate inspection requires that all requirements be made available such as the approved tolerances of dimensions or performance. A standard sample does not provide all this information but must be supported by specification requirements and drawings. The use of the standard sample shall be limited to the illustration of qualities and characteristics that cannot be readily described because detailed test procedures or design data are not available, or because certain qualities and characteristics cannot be definitively expressed, such as the texture of fur, the color of cloth, or the grain of wood. Further, the specification should state the specific characteristics and the degree to which these characteristics are to be observed in the standard sample. When a standard sample is to be furnished, it shall be so stated in section 3. Standard samples are either on view or the means of obtaining standard samples shall be specified in section 6.

5.3.3.9 Toxic chemicals, hazardous substances, and ozone depleting chemicals (ODCs). The use of toxic chemicals, hazardous substances, or ODCs shall be avoided, whenever feasible. The SD-14 provides a readily accessible list of toxic chemicals, hazardous substances, and ODCs. (NOTE: The list of toxic chemicals and hazardous substances changes. Any updates to the list will be reflected first in the EPA Title III List of Lists (EPA 560/4-92-011).) The desired performance requirements should be

specified rather than the specific chemical or substance. If a toxic chemical, hazardous substance, or ODC must be specified, it shall be listed as a key word in section 6 (see 5.3.6.13).

5.3.3.10 Recycled, recovered, or environmentally preferable materials. Where applicable, specifications shall include the following paragraph to encourage procurement and usage of products made from recycled, recovered, or environmentally preferable materials.

"3.X Recycled, recovered, or environmentally preferable materials. Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs."

5.3.3.11 JAN and J marking. The following paragraph shall be included when JAN marking is required:

"The United States Government has adopted, and is exercising legitimate control over the certification marks "JAN" and "J", respectively, to indicate that items so marked or identified are manufactured to, and meet all the requirements of specifications. Accordingly, items acquired to, and meeting all of the criteria specified herein and in applicable specifications shall bear the certification mark "JAN" except that items too small to bear the certification mark "JAN" shall bear the letter "J". The "JAN" or "J" shall be placed immediately before the part number except that if such location would place a hardship on the manufacturer in connection with such marking, the "JAN" or "J" may be located on the first line above or below the part number. Items furnished under contracts or orders which either permit or require deviation from the conditions or requirements specified herein or in applicable specifications shall not bear "JAN" or "J". In the event an item fails to meet the requirements of this specification and the applicable specification sheets or associated specifications, the manufacturer shall remove completely the military part number and the "JAN" or the "J" from the sample tested and also from all items represented by the sample. The "JAN" or "J" certification mark shall not be used on products acquired to contractor drawings or specifications. The United States Government has obtained Certificate of Registration Number 504,860 for the certification mark "JAN" and Registration Number 1,586,261 for the certification mark "J"."

5.3.3.12 Government-furnished property. All property to be furnished by the Government as part of the specification shall be listed and identified by part or identifying number, or stock number. The quantity of each item required for one complete unit shall be listed. Each item entry shall be numbered in order to provide ready reference. The specifications or drawings covering Government-furnished property need not be listed in section 2. Documents listed in section 2 of a specification are not considered Government-furnished property (see 5.3.6.10).

5.3.3.13 Government-loaned property. Property that the Government loans to the contractor for testing or any other purpose and which does not lose its identity by becoming part of the commodity shall be listed under this heading (see 5.3.6.10).

5.3.4 SECTION 4.

5.3.4.1 Verification. Section 4 shall include all inspections to be performed to determine that the item to be offered for acceptance conforms to the requirements in section 3 of the specification (see figure 7). This section shall not include quality requirements that belong in the contract, such as responsibility for inspection, establishment of quality or inspection program requirements, warranties, instructions for nonconforming items, and contractor liability for nonconformance.

5.3.4.2 Classification of inspections. Where section 4 of the specification includes inspections applicable to such requirements as qualification or first article, a classification of inspections shall be included as the first paragraph of section 4 as illustrated in the following examples:

Example A:

"4.1 Classification of inspections. The inspection requirements specified herein are classified as follows:

- a. Qualification inspection (see 4.2).
- b. Conformance inspection (see 4.3)."

Example B:

"4.1 Classification of inspections. The inspection requirements specified herein are classified as follows:

- a. First article inspection (see 4.2).
- b. Conformance inspection (see 4.3)."

5.3.4.3 Inspection conditions. When applicable, the environmental conditions under which all inspections are performed shall be specified as follows:

"4.X Inspection conditions. Unless otherwise specified, all inspections shall be performed in accordance with the test conditions specified in (applicable test method document or applicable paragraph(s) in the specification)."

5.3.4.4 First article inspection. When section 3 identifies a possible need for first article inspection, section 4 shall include a description of the inspection procedure, sequence of the inspections, number of units to be inspected, and the criteria for determining conformance to the requirement specified. It is recommended that a table be included that cross-references the requirements with the appropriate first article examinations and tests.

5.3.4.5 Qualification inspection. When section 3 of the specification specifies a qualification requirement, section 4 shall include a description of the inspection procedure, sequence of inspections, number of units to be inspected, and the criteria for determining conformance to the qualification requirement. It is recommended that a table be included that cross-references the requirements with the appropriate qualification examinations and tests.

5.3.4.6 Conformance inspection. Conformance inspection shall consist of examinations and tests necessary to ensure that production items meet specification requirements. Conformance inspection shall include a description of the inspection procedure, sequence of inspections, number of units to be inspected, and the criteria for determining conformance to the requirement specified. Conformance examinations and tests may be the same as those specified for first article inspection, but they shall not duplicate any long term or special tests that were used to justify inclusion of qualification in a specification. It is recommended that a table be included that cross-references requirements with the appropriate quality conformance examinations and tests.

5.3.4.6.1 Sampling for conformance inspection. Sampling is a valuable tool for verification of compliance with specification requirements. Specifications may include sampling, but shall not include any fixed acceptable quality levels, lot tolerance percent defectives, or other types of fixed levels of defects. Such provisions may be included in the quality assurance section of the contract, but shall not be in the specification.

5.3.4.7 Classification of defects. When applicable, classification of defects shall be included in section 4. When required for reference purposes in reporting inspection results, the defects in a classification shall be numbered only in accordance with the following:

- 1 through 99 - critical defects
- 101 through 199 - major defects
- 201 through 299 - minor defects

If additional groupings are required, they shall be numbered in the 301, 401, 501, etc., series. If the number of defects in any group exceeds 100, the series should start over with a letter suffix; such as, 101a, 102a, 103a.

5.3.5 SECTION 5. Packaging requirements are specified in the contract or order. The following standard requirement shall be used in all specifications where packaging of an item will be required.

"5. PACKAGING

"5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of materiel is to be performed by DoD personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Department or Defense Agency, or within the Military Department's System Command. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity."

5.3.6 SECTION 6.

5.3.6.1 Notes. Section 6 is not contractually binding. It shall only contain information of a general or explanatory nature, and no requirements shall appear therein (see figure 8). It shall contain information designed to assist in determining the applicability of the specification and the selection of appropriate type, grade, or class of the commodity, additional supersession data, changes in product designation such as grades or class, standard sample (if required), and other information deemed appropriate. This section shall include the following in the order listed, as applicable:

- a. Parenthetical note.
- b. Intended use.
- c. Acquisition requirements.
- d. Associated DIDs (may only be listed for data product specifications only).
- e. Technical manual specification information.
- f. Standard sample.
- g. Qualification.
- h. Supersession data (see 5.2.4).
- i. Definitions (see 4.19).
- j. Cross-reference of classifications and substitutability data.

- k. Government-furnished and Government-loaned property.
- l. Patent notice.
- m. Part or identifying number (PIN) structure.
- n. Subject term (key word) listing.
- o. International interest.
- p. Identification of changes.

5.3.6.2 Parenthetical note. The following parenthetical note shall appear immediately below "6. NOTES":

"(This section contains information of a general or explanatory nature which may be helpful, but is not mandatory.)"

5.3.6.3 Intended use. Information relative to the use of the item covered by the specification shall be included under this heading as 6.1. The difference among types, grades, and classes in the specification shall be explained herein. If there are any particular applications for which the item or material is not well adapted, this information shall also be included.

5.3.6.4 Acquisition requirements. Under this paragraph shall be listed all the options that must be exercised by the procuring activity in invitations for bids, contracts, or other purchasing documents. Options shall be listed in the sequence in which they appear in the specification. Acquisition requirements shall appear as 6.2 and shall include the following information as a minimum:

"6.2 Acquisition requirements. Acquisition documents must specify the following:

- a. Title, number, and date of the specification.
- b. Issue of DoDISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2. _).
- c. Packaging requirements (see 5.1)."

5.3.6.5 Associated DIDs. A data product specification shall list the DIDs, for which it serves as the source document, in section 6 using the following paragraph:

"6.X Associated Data Item Descriptions (DIDs). This specification is cited in DoD 5010.12-L, Acquisition Management Systems and Data Requirements Control List (AMSDL), as the source document for the following DIDs. When it is necessary to obtain the data, the applicable DIDs must be

listed on the Contract Data Requirements List (DD Form 1423), except where the DoD Federal Acquisition Regulation Supplement exempts the requirement for a DD Form 1423.

DID Number

DID Title

The above DIDs were current as of the date of this specification. The current issue of the AMSDL must be researched to ensure that only current and approved DIDs are cited on the DD Form 1423."

5.3.6.6 Technical manual specifications. When a specification is prepared to address technical manuals for the installation, operation, maintenance, training, and support of weapon systems, weapon system components, and support equipment, the following shall be inserted in section 6 of that specification:

"6.X Technical manuals. The requirement for technical manuals should be considered when this specification is applied on a contract. If technical manuals are required, specifications and standards that have been cleared and listed in DoD 5010.12-L, Acquisition Management Systems and Data Requirements Control List (AMSDL) must be listed on a separate Contract Data Requirements List (DD Form 1423), which is included as an exhibit to the contract. The technical manuals must be acquired under separate contract line item in the contract."

5.3.6.7 Standard sample. If section 3 of the specification specifies a standard sample in accordance with 5.3.3.9, information for obtaining and examining the standard sample shall be stated under this paragraph identification.

5.3.6.8 Qualification. Where qualification of a product (QPL) or a manufacturer's capabilities (QML) is a requirement of the specification, information concerning such qualification shall be stated in this section as follows:

"6.X Qualification. With respect to products requiring qualification, awards will be made only for products which are, at the time of award of contract, qualified for inclusion in Qualified Products List QPL No.____ whether or not such products have actually been so listed by that date. The attention of the contractors is called to these requirements, and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or purchase orders for the products covered by this specification. Information pertaining to qualification of products may be obtained from (insert name and address of qualifying activity)."

When applicable, substitute the words "Qualified Manufacturers List" for "Qualified Products List" and "manufacturers" for "products" in the paragraph above.

5.3.6.9 Cross-reference. A cross-reference of old to new military classification or PIN made by specification revision showing substitutability relationship shall be included. The extent to which new items may be binned with or substituted for prior items shall be stated here.

5.3.6.10 Government-furnished and Government-loaned property. When Government-furnished or Government-loaned property is listed in the specification, the following paragraphs shall be added to section 6:

"6.X Government-furnished property. The contracting officer should arrange to furnish the property listed in 3..."

"6.X Government-loaned property. The contracting officer should arrange to loan the property listed in 3..."

5.3.6.11 Patent notice. When a specification is prepared to cover a patented item, the specification shall list the patents involved and include the following paragraph.

"6.X Patent notice. The Government has a royalty-free license under the following listed patents for the benefit of manufacturers of the item either for the Government or for use in equipment to be delivered to the Government.

US patent number"

If royalty-free licenses are not obtainable, the specification shall list the patents together with their expiration date and the statement that the Government does not have a royalty-free license.

5.3.6.12 Part or Identifying Number (PIN). When a specification requires a PIN (see 4.4), section 6 shall include a paragraph entitled "Part or Identifying Number" which will either describe how the PIN is constructed or refer to the appropriate associated document or appendix that describes the PIN construction.

5.3.6.13 Subject term (key word) listing. Specifications shall contain a listing of subject terms (key words) which would allow identification of the document during retrieval searches. Subject terms may be descriptors, keywords, posting terms, identifiers, open-ended terms, subject headings, acronyms, code words, or any words or phrases that identify the principal subjects covered in the report, and that conform to standard terminology and are exact enough to be used as subject index entries. If the specification requires the use of any toxic chemicals, hazardous substances, or ODCs listed in SD-14, these should be included in the key word listing. The subject terms shall not repeat words found in the title of the document. The subject terms are to be listed alphabetically in a single column with the main noun or word first, followed by sequential modifiers separated by commas. Word groups considered to be proper or recognized nouns such as "printed circuit board" should not be separated. The number of subject terms listed shall not exceed 25.

5.3.6.14 International standardization agreements. The preparing activity is responsible for implementation of international standardization agreements as they relate to its responsibilities. When specifications reference international standardization agreements as part of their requirements, the following statement shall be added:

"Certain provisions of this specification (identified by paragraph number or similar manner, if appropriate) are the subject of international standardization agreement (insert appropriate document reference). When amendment, revision, or cancellation of this specification is proposed which will modify the international agreement concerned, the preparing activity will take appropriate action through international standardization channels, including departmental standardization offices, to change the agreement or make other appropriate accommodations."

5.3.6.15 Identification of changes from previous issue. Revisions of specifications shall include asterisks or vertical lines at the margins of the pages to indicate where changes have been made with respect to the previous issue. The following note shall be included as the last paragraph in section 6 of the specification:

"6.X Changes from previous issue. The margins of this specification are marked with asterisks (or vertical lines) to indicate where changes from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue."

If the changes are extensive and too numerous to annotate, the following note shall be included in section 6 of the specification, but every effort should be made to annotate the changes:

"6.X Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes."

5.4 Concluding Material. The following concluding material shall be provided at the end of the document following any tables, figures, appendixes, or indexes, and before the DD Form 1426.

- a. Preparing activity.
- b. Custodians (applies to coordinated specifications).
- c. Review activities (applies to single department or fully coordinated specifications).
- d. Industry association interest (if any).
- e. Civil agency coordinating activities (if any).
- f. Agent, if assigned.
- g. Project number (required for all standardization documents, except for supplements and validation notices).

5.4.1. Activity symbols. The symbols used to identify the preparing activity, custodians, review activities, and other interested activities shall be in accordance with the current issue of SD-1. In addition, acronyms for interested industry associations (includes Non-Government Standards Bodies) that were included in the coordination process may be listed.

"Custodians: (where appropriate)

Army - AR
Navy - OS
Air Force - 16

Preparing activity:

Navy - OS
(Project 9110-1234)

Review activities: (where appropriate)

Army - AT, CR, ME
Navy - EC, SH, YD
Air Force - 11, 26, 85
DLA - GS

Industry associations: (where appropriate)

AIA, ASTM, EIA, SAE

Civil Agency Coordinating Activities: (where appropriate)

AGR - APS
HHS - FEC"

The preparing activity shall list potential custodians and review activities during specification development from interest as registered in the FSC DoDISS and its cumulative bimonthly supplement, cataloging data, project history files, and other sources. The preparing activity shall confirm the selected level of interest with these activities during coordination. A preparing activity or custodian shall not be listed as a review activity. If a military department has no interested activity, the department shall be omitted from its sequential order of listing. The listing of review activities shall be in alphabetical or numerical order, as applicable.

5.4.2. Standardization Document Improvement Proposal (DD Form 1426). Preparing activities shall include this form as the last sheet of all specifications in six-section format. It is not required on specification sheets, amendments, supplements, and notices. The preparing activity shall fill in the information for blocks 1, 2, 3, and 8 of the form. This form is not required on classified specifications; however, if used, security regulations shall apply (see 4.8). (For an example, see the DD Form 1426 at the end of this standard.)

5.5 Appendix.

5.5.1 General. When required, an appendix as set forth in this section shall be included as an integral part of a specification. Table of contents and cover shall not be used.

5.5.2 Purpose. The appendix is supplementary information at the end of the specification and bound integrally with it (see figure 9).

5.5.3 Numbering and titling. The appendix shall begin on the next page following the specification. The upper center of each page shall be marked with the specification identifier and the word "APPENDIX" two lines below the identifier. When it is essential to include more than one appendix, identification shall be alphabetical (A, B, etc.). The title shall be located two lines below the word "APPENDIX" on the beginning page only.

5.5.4 Section and paragraph numbering. The sections in the appendix shall be designated by a letter corresponding to the appendix letter, followed by a period and an Arabic number. For example, the first section in Appendix A would be "A.1" and the second section in Appendix B would be "B.2." Paragraphs and subparagraphs shall be numbered consecutively within each section of the appendix. For example:

Requirements section of Appendix D.....	D.3
First paragraph.....	D.3.1
First subparagraph.....	D.3.1.1
Second paragraph.....	D.3.2

5.5.5 Page numbering. Page numbers shall be numbered consecutively following the last page of the specification.

5.5.6 Scope. An appendix shall have a statement of scope as its first paragraph to indicate the coverage and limitations of the appendix to ensure its proper application and use. The following shall be included: "This Appendix (is or is not) a mandatory part of the specification. The information contained herein is intended for (compliance or guidance only)".

5.5.7 References. References which may be required and which relate only to the appendix shall be listed in the appendix under the heading "APPLICABLE DOCUMENTS" and shall not be referenced in section 2 of the specification. The references shall be listed as specified for section 2 (see 5.3.2).

5.6 Index. An alphabetical index may be placed at the end of a specification to permit ready reference to contents. Its use shall be limited to lengthy specifications. If used, an index follows the basic specification and any appendix. The pages are numbered continuously following the last page of the basic specification or appendix, as applicable. The document identifier shall appear in the upper center of each page.

5.7 Revisions.

5.7.1 Specification revision. A revision shall be prepared and processed in the same manner as a new document. When a revision is made, the entire contents of the specification shall be analyzed, and brought up-to-date and into compliance with the requirements of this standard. Revisions can also include inactivation (see 5.2.4.1).

5.7.2 Format. Revisions shall be prepared in the format of a new specification. All paragraphs, figures, tables, and pages shall be renumbered, as necessary, to eliminate all number suffixes and deletions and to establish correct sequence of requirements that were added by amendment.

5.7.3 Notation of revisions. When specifications are revised, and if the changes are not too extensive, asterisks or vertical lines shall be placed at the margin of the page to indicate where changes (additions, modifications, corrections, deletions) have been made with respect to the previous issue. See 5.3.6.15 for note to be included in section 6 of the specification explaining the use or absence of the asterisk or vertical line.

5.7.3.1 Summary sheet for proposed coordinated specification. A summary sheet shall be prepared for a proposed coordinated specification indicating the significant additions, deletions, corrections, or modifications. When practicable, supporting background information concerning the changes shall be included. The summary sheet shall accompany the proposed draft when it is circulated for coordination.

5.7.4 Revision indicators. Revisions of specifications shall be indicated by a capital Gothic letter following the number and preceding any suffix. Example: MIL-PRF-17A. The first revision shall be marked with the letter "A" and succeeding revisions shall be indicated by the other letters in alphabetical sequence, except that the letters I, O, Q, S, and Z shall not be used. When a coordinated specification supersedes a limited coordination specification having the same number, the first issue of the coordinated specification shall be considered a revision of the limited coordination specification, thus taking the next appropriate Gothic letter.

Example: The first coordinated revision superseding MIL-PRF-865(SH) would be identified as MIL-PRF-865A.

If the coordinated revision supersedes an interim specification of the same number, the two zeros in front of the number and activity symbol following the number shall be dropped and the next appropriate capital Gothic letter shall be added.

Example: MIL-DTL-005237A(GL) when superseded shall appear as MIL-DTL-5237B.

5.7.5 PIN revisions. Specification revisions that modify the requirements for items covered to the extent that they are not both physically and functionally interchangeable with those covered by the specification being superseded, shall assign new PINs to the items. A cross-reference of new PINs which are substitutable for the preceding part numbers shall be included in the specification. Each generation of substitution data will be retained in the specification for traceability. Revisions which do not affect the interchangeability characteristics of the items covered shall retain the existing part numbers, but the part numbers shall be designated as PINs (see 4.4).

5.8 Supplement

5.8.1 General. A supplement to a specification shall be a separately issued document, associated with the applicable specification (see figure 10) and shall be issued only when the number of associated documents exceeds five in number, in lieu of listing in section 2 of the basic document (see 5.3.2.1.1).

5.8.2 Contents. A supplement shall be prepared to list associated specifications, specification sheets, or MS sheets. It may also include guidance information to assist users with the proper selection or application of the listed documents.

5.8.3 Format. Supplements shall carry the same headings, titles, symbols, specification number, and revision, as the general specifications with which they are associated. The word "SUPPLEMENT" followed by the Arabic number "1" and date of issue shall also be included beneath the document identifier. Supplement revisions shall be marked with a capital revision letter in alphabetical sequence to identify successive issues of the supplement. For example, "SUPPLEMENT 1A" would supersede "SUPPLEMENT 1." Each time the basic specification is revised, the supplement is revised and reverts to "Supplement 1".

5.8.4 Preamble. The following preamble shall be on supplements under the title: "This supplement forms a part of MIL-PRF-000, dated ____."

5.8.5 Captions for supplements. Captions such as "ASSOCIATED SPECIFICATIONS," "SPECIFICATION SHEETS," and "MS SHEETS" shall head each group of associated documents listed on the supplement.

5.8.6 Concluding material. Supplements shall show the preparing activity symbol, FSC designation, and agent, if applicable. The custodian and review activity symbols may be omitted (see figure 10).

5.8.7 Page numbering and document identification of supplements. The first page shall indicate the total number of pages in the supplement and the page number (for example, 1 of 6) at the bottom center of the page and shall have the document identifier and date in the upper right corner of the page. Page 2 and all succeeding pages shall be successively numbered with Arabic numbers at the bottom center of the page. The document identifier shall be placed on the second and succeeding pages in the upper center of the page. The word "SUPPLEMENT" and number shall be placed below the document identifier (for example, SUPPLEMENT 1, 1A, 1B, etc.).

5.8.8 FSC, FSG, or area designation. The FSC, FSG, or area designation shall be the same as for the basic specification, and shall be shown in the lower right hand corner of the first page.

5.8.9 Distribution statement. The appropriate distribution statement shall be placed on the first page on the line immediately below the FSC, FSG, or area designation as shown on figure 10.

5.9 Amendments

5.9.1 Purpose. An amendment shall be prepared to make brief or minor changes and to correct errors in specifications, associated specifications, and specification sheets (see figures 11 and 12). Lengthy changes to specifications shall be accomplished as revisions (see 5.7). When the number of pages in the amendment exceeds 25 percent of the pages of the specification, or when the security classification is changed, the document shall be revised.

5.9.2 Document identifiers for amendments to specifications. The document identifier of the amendment shall be the same as the specification with which it is associated. The word "AMENDMENT" followed by a sequentially assigned Arabic serial number, and the date of approval shall appear under the document identifier. Amendments shall be numbered consecutively for each specification. Amendment numbers, including those for interim amendments, will be assigned by the preparing activity for the specification. A line shall be placed between the approval date and the supersession data shown. Identification of specification amendments shall be in the following formats:

a. Amendment to coordinated specification:

MIL-PRF-39029/79	or	MIL-DTL-54224C
AMENDMENT 1		AMENDMENT 2
10 March 1995		<u>15 April 1995</u>
		SUPERSEDING
		AMENDMENT 1
		8 February 1993

b. Amendment to limited coordination specification:

MIL-PRF-6106/7B(USAF)
 AMENDMENT 2
1 May 1995
 SUPERSEDING
 AMENDMENT 1
 12 June 1991

c. Interim amendment to coordinated specification. (The symbol of the authorizing activity shall be placed immediately following the amendment number.):

MIL-PRF-19500/241D
 INT. AMENDMENT 1(USAF)
 20 November 1995

d. Interim amendment superseding an interim amendment:

MIL-PRF-19500/158F
INT. AMENDMENT 4(USAF)
15 May 1995
SUPERSEDING
INT. AMENDMENT 3(USAF)
22 March 1977
USED IN LIEU OF
AMENDMENT 2
11 October 1973

5.9.3 Amendment headings and titles. The headings and titles for specification amendments shall be the same as the specifications with which they are associated.

5.9.4 Preambles. All amendments to specifications shall have a preamble. One of the following preambles shall be used.

5.9.4.1 Amendments to coordinated specifications:

"This amendment forms a part of _____, dated _____, and is approved for use by all Departments and Agencies of the Department of Defense."

5.9.4.2 Amendments to limited coordination specifications:

"This amendment forms a part of _____, dated _____, and is approved for use by the (preparing activity), Department of the (____) and is available for use by all Departments and Agencies of the Department of Defense."

"This amendment forms a part of _____, dated _____, and is approved for use by the Department of the () and is available for use by all Departments and Agencies of the Department of Defense."

5.9.4.3 Interim amendments to coordinated specifications:

"This interim amendment is approved for use within (Military Department or Activity), with MIL-PRF-0000 (dated)_____."

5.9.4.4 Amendments to specifications with restricted distribution. When an amendment is marked with other than "DISTRIBUTION STATEMENT A" (see 5.2.9), the following shall be added at the end of the appropriate preamble: "within the distribution limitations noted at the bottom of the page."

5.9.5 FSC, FSG, or area designation. The FSC, FSG, or area designation shall be the same as for the basic specification and shall be shown in the lower right hand corner of the first page.

5.9.6 Distribution statement. The appropriate distribution statement shall be placed on the first page on the line immediately below the FSC, FSG, or area designation as shown on figures 11 and 12.

5.9.7 Arrangement of text.

5.9.7.1 Replacement page method. Insertable replacement pages may form a portion of the amendment to a specification in addition to (or in place of) the sequential listing of individual corrections. Page 1 of a specification shall not be amended by a replacement page. Changes to page one shall only be accomplished as specified in 5.9.7.2 or by complete revision to the specification. In using the insertable replacement page method, both the page being changed and the applicable back-up page must be replaced so that the old page can be removed and the new page inserted. Back-up pages requiring corrections will be treated the same as an insertable replacement page and changes annotated in accordance with 5.9.13. All pages, including pages reprinted without change as back-up pages, shall bear the notation "AMENDMENT (amendment number)" beneath the document identifier at the top of the page. A note "Supersedes page (number) of (either the basic specification or the previous amendment, as applicable) of (date)" shall be placed in the lower left-hand corner of each revised page. Pages reprinted without change shall be marked "Reprinted without change" in the lower left-hand corner. The insertable replacement pages shall be appended to the amendment and shall bear the page numbers of the pages being replaced. The first page of the amendment shall carry a listing of the insertable replacement pages under the following heading:

"The attached insertable replacement pages listed below are replacements for stipulated pages. When the new pages have been entered in the document, insert the amendment as the cover sheet to the specification."

5.9.7.2 Text substitution method. Each individual correction shall be presented separately and the particular page, paragraph, line, table, or figure in which it occurs shall be identified. The page number identifying location of changes shall be centered on the page. The word "PAGE" shall be capitalized and followed by the number. A page number shall be shown only once and shall not be underlined. When changes continue on to another page of the amendment, the successive pages shall be typed as a continuous document. The "PAGE" number shall not be repeated on the following page of the amendment.

5.9.8 Verb forms. The imperative form of the verb shall be used in the amendment for indicating the changes to be made in the specification. For example: Delete "2.50" and substitute "2.00".

5.9.9 Deletion of paragraphs. When paragraphs of the specification are deleted by the amendment, the remaining paragraphs in the section need not be renumbered.

5.9.10 Insertion of paragraphs, figures, and tables. When new paragraphs, figures, or tables are added to the specification, they should be numbered in such a way that renumbering of existing paragraphs, figures, and tables is not necessary. For example:

<u>Existing</u>	<u>Added</u>	<u>Existing</u>
Table II	Table II-1	Table III
Figure 2	Figure 2A	Figure 3
Paragraph 5.11	Paragraph 5.11.1	Paragraph 5.12

5.9.11 Successive (cumulative) amendments. Amendments are cumulative and each successive amendment shall be written to completely supersede the previous amendment.

5.9.12 Successive interim amendments. Except for those requirements that are being changed, each successive interim amendment shall consolidate information contained in the previous interim amendment.

5.9.13 Page numbering. The first page shall indicate the total number of pages in the amendment and the page number (such as, 1 of 3 or 1 of 1) at the bottom center of page. All remaining pages of multi-page amendments shall be successively numbered with Arabic numerals at the bottom center of page. Insertable replacement pages shall carry the page number of the page being replaced and, for the purpose of page numbering only, shall not be counted as part of the amendment.

5.9.14 Concluding material. The concluding material of the specification shall be shown after the text of the amendment in the same manner as in the basic specification, including the project number for the amendment action. For interim amendments, the preparing activity, review activities, if any, of the limited coordination department, and project number shall be listed.

5.9.15 Changes from the previous amendment. An asterisk or vertical line shall be placed in the left margin opposite the change to denote a change from the previous amendment (on figures, the asterisk shall be placed as near the actual change as possible, so that it can be readily identified). The following note shall be added at the end of the amendment preceding the concluding material:

"The margins of this amendment are marked with an asterisk (or vertical lines) to indicate where changes from the previous amendment were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous amendment."

5.10 Notices.

5.10.1 Purpose. Notices are used to inactivate for new design, cancel, reinstate, reactivate, or validate specifications. Notices shall not be used to transmit revisions or amendments. Notices completely supersede all previous notices.

5.10.2 Validation notice. A validation notice shall be prepared to indicate that a specification is technically valid without change. A validation notice shall be issued without a project number and without formal coordination. The notice is required at the time of the five year overage review if the document is determined to be valid and in compliance with defense acquisition and standardization policies. Technical changes shall not be made on the validation notice, but the preparing activity shall update the custodians, review activities, and other interested activities on the notice. The format of the notice shall be similar to that shown on figure 13, figure 14 for validation of inactive for new design documents, or figure 15 for a group validation. The actual wording may vary to indicate the reason for the notice, however, it shall include a definite statement that the document as approved is still valid for acquisition without change.

5.10.3 Inactive for new design notice. An inactive for new design notice shall be prepared to indicate that an item or process is prohibited for use in new design and is used only in existing assemblies or units. Items or processes so designed may be used for new assemblies or units developed for existing design contracts where the inactive item or process is being used for existing designs in the same contract, or in assemblies for existing units or systems required under future contracts. Superseding documents for new design application shall be referenced in the notice when applicable and shall have a different specification number than that of the specification covered by the notice. When applicable, a precautionary note shall be included as follows: "CAUTION: The supersession information is valid as of the date of this notice and may be superseded by subsequent revisions of the superseding document." When a QPL is associated with the "inactive for new design" specification, the following sentence shall be included in the notice: "The Qualified Products List (QPL) associated with this inactive for new design specification will be maintained until acquisition of the product is no longer required whereupon the specification and QPL will be canceled" (see figure 16). Inactive status can also be accomplished in a revision (see 5.2.4.1).

5.10.4 Cancellation notice. A cancellation notice shall be prepared when a specification or specification sheet is no longer required (see figures 17 and 18). A group cancellation may also be done for a general specification and associated specifications or specification sheets (see figure 19). The cancellation notice shall indicate supersession information and classification cross-references, when applicable. Custodians and review activities shall be shown.

5.10.5 Reinstatement notice. A reinstatement notice shall be prepared to reinstate a canceled specification. The preparing activity, or with its permission, another activity, may reinstate a canceled specification by a notice of reinstatement (see figure 20). The notice of reinstatement, with a sequentially assigned Arabic number, will supersede the previous notice of cancellation. If the specification is coordinated, only the custodians and interested activities who have approved the reinstatement shall be shown on the reinstatement notice. If the coordinated document is reinstated for use by a single activity, the activity symbol shall be shown after the specification number and this information shall also be reflected in the text. The text for the reinstatement notice shall be as shown on figure 20. Reinstatement notices submitted to the DoDSSP for printing and distribution will be accompanied by a copy of the reinstated specification and if applicable, the amended or revised specification. Both shall be suitable for photo-offset reproduction. Reinstated documents will be distributed as attachments to the reinstatement notice including a new DD Form 1426 (see 5.4.1.2).

5.10.6 Reactivation notice. A reactivation notice shall be prepared to reactivate an inactive for new design specification. The preparing activity, or with its permission, another activity, may reactivate an inactive for new design specification by a notice of reactivation (see figure 21). The notice of reactivation, with a sequentially assigned Arabic number, will supersede the notice of inactive for new design. If the specification is coordinated, only the custodians and interested activities who have approved the reactivation shall be shown on the reinstatement notice. If the coordinated document is reinstated for use by a single activity, the activity symbol shall be shown after the specification number and this information shall also be reflected in the text. The text for the reactivation notice shall be as shown on figure 21.

5.10.7 Document identifier. The document identifier of a notice shall be typed in the upper right corner of the first page. The following elements shall be included with the first letters in alignment (block form):

a. The document identifier of the specification (associated specification or specification sheet) being inactivated, canceled, reinstated, or validated. The identification of limited coordination or interim specifications includes the activity code designation of the preparing activity.

b. The word "NOTICE" followed by a sequentially assigned Arabic number shall be placed below the specification number on inactivations, cancellations, reinstatements, and validations.

c. The date of approval.

Example of sequential actions:

1. Inactive for new design notice:

MIL-PRF-82143(MC)
NOTICE 1
18 October 1995

2. Cancellation notice:

MIL-PRF-82143(MC)
NOTICE 2
16 February 1995
SUPERSEDING
NOTICE 1
18 October 1972

3. Reinstatement notice:

MIL-PRF-82143(MC)
NOTICE 3
15 April 1995
SUPERSEDING
NOTICE 2
16 February 1973

4. Validation notice:

MIL-PRF-82143(MC)
NOTICE 4
13 May 1995
SUPERSEDING
NOTICE 3
15 April 1976

5.10.8 Heading and title. A notice shall carry the same heading and title as the specification. The notice of cancellation, inactivation, reinstatement, reactivation, or validation shall be enclosed in a box in the upper left-hand corner of the first page (see figures 13 through 21).

5.10.9 Preamble. A preamble is not required.

5.10.10 FSC, FSG, or area designation. The FSC, FSG, or area designation shall be the same as for the basic specification and shall be shown in the lower right hand corner of the first page.

5.10.11 Distribution statement. The appropriate distribution statement shall be placed on the first page on the line immediately below the FSC, FSG, or area designation as shown on figures 13 through 21.

5.10.12 Concluding material. The concluding material for all notices shall be in accordance with 5.4.1, except that validation notices shall not require project numbers.

5.11 Associated specifications.

5.11.1 Purpose. An associated specification is a six-section document associated with a general specification (see 3.10), covering the unique technical requirements and tests for a single style, type, class, grade, or model of an item. An associated specification is similar in intent to a specification sheet (see 5.12), but differs in format and level of detail.

5.11.2 Limitations. Associated specifications shall not be prepared unless it is known that a family of items differing in style, type, class, grade, model, or similar variables will need individual coverage. An associated specification must be used together with its associated general specification to form a complete acquisition specification for the item(s) covered. Requirements in the general specification shall not be duplicated in associated specifications. All requirements cited in the general specification are applicable to the associated specifications unless otherwise indicated.

5.11.3 Format and content. The format and content requirements for associated specifications shall be the same as those requirements specified for six-section specifications, except as follows:

- a. The document identifier shall be as specified in 5.2.3.1.1.
- b. The document title shall be as specified in 5.12.9.
- c. The first paragraph in section 3 shall be as follows:

"3.1 General. The requirements for acquiring the product described herein shall consist of this document and (fill in general specification number)."

5.12 Specification sheets.

5.12.1 Purpose. A specification sheet is a document associated with a general specification (see 3.10), covering the unique technical requirements and inspections for a single style, type, class, grade, or model of an item (or series of items which vary only with respect to parameters such as value, size, tolerance, material, finish, failure rate) which are best presented in graphic or tabular form. See figure 22 for an example.

5.12.2 Limitations. Specification sheets shall not be prepared unless it is known that a family of items differing in style, type, class, grade, model, or similar variables will need individual coverage. Any single specification sheet together with its associated general specification, form a complete acquisition specification for the item(s) covered. Thus, specification sheets shall supplement the referenced general specification. Requirements in the general specification shall not be duplicated in specification sheets. All requirements cited in the general specification are applicable to the associated documents unless otherwise indicated.

5.12.3 Document identifier. The specification sheet shall be identified as specified in 5.2.3.1.1. The document identifier shall be placed in accordance with 4.14.

5.12.4 Date and supersession data. The date and supersession data shall be as specified in 5.2.3.1.2 and 5.2.4, respectively.

5.12.5 FSC, FSG, or area designation. The FSC, FSG, or area designation requirement shall be as specified in 5.2.7.

5.12.6 Distribution statement. The appropriate distribution statement shall be placed on the first page on the line immediately below the FSC, FSG, or area designation as shown on figure 22.

5.12.7 Page number. The first page only shall indicate the page number and total number of pages in the specification sheet at the bottom center of the page. Example: 1 of 7. The successive pages shall contain the page number only (2, 3, 4, etc.), at the bottom center of the page.

5.12.8 Heading. Each specification sheet shall have the heading "PERFORMANCE SPECIFICATION SHEET" or "DETAIL SPECIFICATION SHEET" two lines above the title (see figure 22). The criteria given in 5.3.3.3 and 5.3.3.4 shall determine whether a specification sheet is a performance specification or detail specification.

5.12.9 Title. Where the specification sheets are for similar items with minor differences from one item to another, the specification sheet titles shall be the same as that of the general specification (excluding the words "GENERAL SPECIFICATION FOR") with an identification of the style, type, class, grade, or model covered, as appropriate. Where it is determined that a specification sheet shall be prepared for components of an assembly which have different basic noun names than the general specification, the specification sheet titles shall reflect the basic noun name of the specific item associated with the general specification. In all cases, the title shall be determined in accordance with the detail instruction in 5.2.2.

5.12.10 Preamble. The preamble shall be as specified in 5.2.5.

5.12.11 Acquisition note. Under the preamble, the following shall be included:

"The requirements for acquiring the product described herein shall consist of this specification and (insert general specification number)."

5.12.12 Content. The specification sheet shall consist of dimensional data, and if applicable, requirements, tests, or examinations not covered in the general specification. The text shall in most instances cover a number of items differing only in one or two characteristics, such as length, diameter, resistance, capacitance, ohmic value, etc. Only one style, type, or model of an item (process) shall be covered by a specification sheet. The specification sheet shall contain the description, substitutability data, design features, characteristics, and performance data, as applicable.

5.12.13 Format. Presentation shall be in the form of figures, tables, and text on 8-1/2 by 11-inch plain white paper. The DD Form 672 shall not be used. Any figures shall normally be placed at the top of the first page and shall be numbered and titled. Requirements cited on a specification sheet should appear in the same sequence shown on the general specification. Requirements in the general specification that are not applicable to the specification sheet shall be noted (for example, shock N/A).

5.12.14 PIN. The PIN shall be placed in the specification sheet (see 4.4). National Stock Numbers (NSNs) shall not be included. There are two types of PINs used. The first type is a nonsignificant number as shown in the following example:

a. Example of nonsignificant PIN.

"PIN: M12345/2-(applicable dash number from table I).

TABLE I. Dash number and operating characteristics.

Dash no.	Fig.	Actuating flow increasing gal/min max	Deactuating flow decreasing gal/min minimum	Maximum allowable pressure drop
01	1	0.45	0.3	4 lb _f /in ² at 0.3 gal/min
02	2	0.85	0.5	6 lb _f /in ² at 0.7 gal/min
03	3	0.55	0.45	5 lb _f /in ² at 0.5 gal/min
04	4	3.10	2.7	5 lb _f /in ² at 3.0 gal/min

MIL-STD-961D

b. Example of significant PIN (second type).

"PIN: Consists of the letter M, the basic number of the specification sheet, and a dash number compiled from the code.

Specification
sheet number _____ Dash number _____

M12345/1- A 1 0 L 1A
Insert Shield and Shell type Jackscrews Contacts
location or or
retaining plate guide pins

PIN CODE:

<u>Insert</u>	<u>Shield and Shield clamp location or retaining plate</u>	<u>Shell type</u>
A - MS18264	Shield	0 - None
B - MS18240	1 - Top MS24132	
C - MS18242	2 - Side MS24132	
D - MS18244	3 - Top MS24133	
E - MS18246	4 - Side MS24133	
F - MS19258	5 - Top MS18193	
G - MS18250	6 - Side MS18193	
H - MS18252	0 - None included	
J - MS18254		

Jackscrews
or
guide pins

Contacts:

L - Long jackscrews MS18194
S - Short jackscrews MS18195
G - Guidepins MS18197
0 - None included

1A - 100 percent size 16-16
2A - 100 percent size 16-20"

5.12.15 Revisions and amendments. Revisions shall be prepared in accordance with 5.7, and amendments shall be in accordance with 5.9.

5.12.16 MS sheets. Existing MS Sheet Form Standards, as they are revised, shall be reformatted on 8-1/2 by 11 paper. The DD Form 672 has been discontinued and shall not be used. The existing MS number may be retained; however, it is preferred that existing MS numbers be converted to specification sheet numbers (see 5.2.3.1.1) if the renumbering does not adversely affect existing systems. If MS numbers are converted to specification sheet numbers, then substitution data shall be included to supersede every MS dash number. New specification sheets with the MS prefix shall not be prepared for any new specifications. MS specification sheets (formerly known as MS Sheet Form Standards) using the MS numbering system may continue to be used only with a specification where a series of MS numbered documents already exists.

6. NOTES

(This section contains information of a general or explanatory nature which may be helpful, but is not mandatory.)

6.1 Intended use. Specifications conforming to the requirements of this standard are intended for use as military standardization documents and are listed in the DoDISS. The general format described should also be considered for use in developing purchase descriptions and other non-DoDISS procurement specifications especially those which may be converted to a military standardization document at a later date.

6.2 Issue of DoDISS. When this standard is used in acquisition, the applicable issue of the DoDISS must be cited in the solicitation (see 2.2.1 and 2.3).

6.3 Associated Data Item Descriptions (DIDs). This standard is cited in DoD 5010.12-L, Acquisition Management Systems and Data Requirements Control List (AMSDL), as the source document for the following DIDs. When it is necessary to obtain the data, the applicable DIDs must be listed on the Contract Data Requirements List (DD Form 1423), except where the DoD Federal Acquisition Regulation Supplement exempts the requirement for a DD Form 1423.

<u>DID Number</u>	<u>DID Title</u>
DI-SDMP-81465	Performance Specification Documents
DI-SDMP-81464	Detail Specification Documents

The above DIDs were current as of the date of this standard. The current issue of the AMSDL must be researched to ensure that only current and approved DIDs are cited on the DD Form 1423.

6.4 Tailoring guidance. To ensure proper application of this standard, invitations for bids, requests for proposals, and contractual statements of work should tailor the requirements in sections 4 and 5 of this standard to exclude any unnecessary requirements. For example, if the statement of work requires a revision to a stand alone specification, then all the paragraphs in this standard related to amendments, notices, supplements, and specification sheets should be excluded.

6.5 Subject term (key word) listing.

- Amendments
- Cancellation notices
- Data item descriptions
- Detail specifications
- Metric
- MS sheets
- Notices
- Performance specifications
- Reinstatement notices
- Revisions
- Specification sheets
- Standardization documents
- Supplements
- Validation notices

6.6 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

The following checklist may be used in specifications covered by this standard. It is not all inclusive, nor must every item listed be included. This is only a guide and not a replacement for the instructions in this standard.

- | | |
|-----------------------------|--|
| 1. Security classification | 2. Qualification |
| 2. Document identifier | 3. First article |
| 3. Initial draft note | 4. Standard sample |
| 4. Heading | 5. Materials |
| 5. Title | 6. Environmental considerations |
| 6. Supersession data | 7. Recycled, reclaimed, recovered material |
| 7. Preamble | 8. Design |
| 8. Beneficial comments | 9. Construction |
| 9. FSC, FSG, or area | 10. Hardware |
| 10. AMSC number or AMSC N/A | 11. Reliability |
| 11. Distribution statement | 12. Maintainability |
| | 13. Transportability |
| | 14. Performance characteristics |
| | 15. Energy efficiency |
| | 16. Human factors |
| | 17. Safety |
| | 18. Chemical and physical properties |
| | 19. Electromagnetic interference suppression |
| | 20. Dimensions |
| | 21. Weight |
| | 22. Color |
| | 23. Finish |
| | 24. Identification plate |
| | 25. Anti-counterfeiting |
| | 26. Government-furnished property |
| | 27. Government-loaned property |
| | 28. Workmanship |
| | 29. Requirements covered examinations and tests in section 4 |
-
- SECTION 1: SCOPE**
1. Scope
 2. Classification
- SECTION 2: APPLICABLE DOCUMENTS**
1. Required general paragraph
 2. Correct document numbers and titles
 3. Documents referenced in sections 3, 4, and 5 only
 4. Sources for documents
 5. Order of precedence
- SECTION 3: REQUIREMENTS**
1. Paragraph on associated specifications, MS sheets, or specification sheets
 2. Qualification
 3. First article
 4. Standard sample
 5. Materials

FIGURE 1. Checklist for drafting specifications

SECTION 4: VERIFICATION

1. Classification of inspections
2. Inspection conditions
3. Qualification inspection
4. First article inspection
5. Conformance inspection
6. Examinations and tests for verifying requirements in section 3

SECTION 5: PACKAGING

1. Packaging paragraph

SECTION 6: NOTES

1. Parenthetical note
2. Intended use
3. Acquisition requirements
4. Associated DIDs
5. Technical manuals
6. Qualification note
7. Standard sample information
8. Definitions
9. Supersession information
10. Substitutability information
11. Cross-reference of classification
12. Government-furnished property
13. Government-loaned property
14. Patent notice
15. Part or identifying number
16. Subject term (key word) listing

17. International standardization agreements
18. Identification of changes

APPENDIX(CES)

INDEX

CONCLUDING MATERIAL

1. Preparing activity, custodians, review activities, industry associations, civil coordinating activities, and agent
2. Project number
3. DD Form 1426, Standardization Document Improvement Proposal

FIGURE 1. Checklist for drafting specifications - Continued.

The following is a list of standard (boilerplate) paragraphs which are either required or are required when applicable. Except for those items marked with an asterisk, there shall be no deviation from the wording shown in the referenced paragraph. For those paragraphs marked with an asterisk, the referenced paragraph provides only an example of acceptable wording. The precise words will vary depending upon the situation.

ALWAYS REQUIRED

- Preamble (see 5.2.5)
- Beneficial comments (see 5.2.6)
- * Distribution statement (see 5.2.9)
- * Subject term (key word) listing (see 5.3.6.13)

REQUIRED WHEN APPLICABLE

- Draft note (see 5.2)
- General applicable documents paragraph (see 5.3.2.1)
- Government documents (see 5.3.2.1.1)
- Non-Government documents (see 5.3.2.1.2)
- Order of precedence (see 5.3.2.1.3)
- Specification sheets (see 5.3.3.5)
- Qualification requirement (see 5.3.3.6)
- First article requirement (see 5.3.3.7)
- Recycled, recovered, or environmentally preferable materials (see 5.3.3.10)
- JAN marking (see 5.3.3.11)
- * Classification of inspections (see 5.3.4.2)
- * Inspection conditions (see 5.3.4.3)
- Packaging (see 5.3.5)
- Associated DIDs (see 5.3.6.5)
- Qualification note (see 5.3.6.8)
- Government-furnished and government-loaned property (see 5.3.6.10)
- Patent notice (see 5.3.6.11)
- International standardization agreement (see 5.3.6.14)
- Changes from previous issue (see 5.3.6.15)

FIGURE 2. List of standard paragraphs.

1. SCOPE

1.1 Scope. This specification covers spring loaded pressure relief valves for steam service.

1.2 Classification. Pressure relief valves will be of the following types and compositions, as specified (see 6.2).

1.2.1 Types. The types of pressure relief valves are as follows:

Type I - Atmospheric outlet

Type II - Pressure tight outlet

1.2.2 Compositions. The compositions for pressure relief valves are as follows:

Composition A:

Chromium - 2-1/4 percent

Molybdenum - 1 percent

Composition B:

Chromium - 1-1/4 percent

Molybdenum - 1/2 percent

Composition D:

Carbon steel

FIGURE 3. Example of section 1.

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements documents cited in sections 3 and 4 of this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

FEDERAL

TT-S-735	-	Standard Test Fluids; Hydrocarbon.
VV-F-800	-	Fuel Oil, Diesel.

DEPARTMENT OF DEFENSE

MIL-H-5606	-	Hydraulic Fluid, Petroleum Base, Aircraft, Missile, and Ordnance.
MIL-PRF-5624	-	Turbine Fuel, Aviation, Grades JP-4 and JP-5.
MIL-T-6081	-	Lubricating Oil, Jet Engine.
MIL-DTL-7808	-	Lubricating Oil, Aircraft Turbine Engine, Synthetic Base.
MIL-C-22520	-	Crimping Tools, Terminal, Hand or Power Actuated, Wire Termination, and Tool Kits.

(See supplement 1 for list of associated specifications)

FIGURE 4. Example of section 2.

STANDARDS

FEDERAL

FED-STD-H28 - Screw Thread Standards For

DEPARTMENT OF DEFENSE

MIL-STD-454 - Standard and General Requirements for Electronic Equipment.

(Unless otherwise indicated, copies of the above specifications, standards, and handbooks are available from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094).

2.2.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

DRAWINGS

NAVAIR 12345 - Jet Engine Design

(Copies of this drawing are available from the Naval Air Systems Command, Code 051, Washington, DC 20402.)

2.3 Non-Government publications. The following document forms a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted are those listed in the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS are the issues of the documents cited in the solicitation (see 6.2).

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 484 - Bars, Billets and Forgings, Stainless and Heat-Resisting, General Requirement for (DoD adopted)

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103-1187.)

2.4 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

FIGURE 4. Example of section 2 - Continued.

3. REQUIREMENTS

3.1 First article. When specified (see 6.2), a sample shall be subjected to first article inspection in accordance with 4.3.

3.2 Materials. The contractor shall select the materials, but the materials shall be capable of meeting all of the operational and environmental requirements specified herein. The materials specified in MIL-P-11268 are recommended, but are not mandatory. Recovered materials shall be used to the maximum extent possible.

3.3 Design. The biocular eyepiece shall conform to Drawing DLSM-B-805103 to ensure proper interface with the Tank Mounted Thermal Sight.

3.4 Weight. The total weight of the biocular eyepiece shall not exceed 10 pounds.

3.5 Performance characteristics.

3.5.1 Field of view to the eye. The field of view to the eye shall be not less than 39 degrees.

3.5.2 Magnification. The on-axis magnification shall be not less than 4.5 times.

3.5.3 Field overlap. The biocular eyepiece shall provide at least 50 percent field overlap with field overlap calculated using the diameter and not the area of the overlapping images. These conditions shall be satisfied at the fixed diopter setting.

3.5.4 Biocular focus. The eyepiece shall be focused at minus 2.5 plus or minus 0.3 diopters.

3.5.5 Field flatness. The biocular eyepiece shall have a flat tangential field within plus or minus 1/2 diopter across the outer 50 percent of the 40-mm format and within plus or minus 1/4 diopter across the central 50 percent of the 40-mm format at the fixed diopter setting.

3.5.6 Resolution. The visual axial resolution (central 25 percent of the field of view) of the biocular eyepiece shall be not less than 35.9 line pairs per millimeter. The remaining field of view shall resolve 17.9 line pairs per millimeter.

3.5.7 Transmission. The transmission of the biocular eyepiece shall be at least 85 percent over the entire aperture for the region of spectral output of a P-20 phosphor.

3.5.8 Effective focal length. The effective focal length shall be 1.733 plus or minus 0.017 inches.

FIGURE 5. Example of requirements in performance specification.

3.5.9 Modulation transfer function (MTF). With a single 5-mm exit pupil decentered plus or minus 27.5-mm from the optical axis and located at a 60-mm eye relief, the MTF shall be at least equal to the MTF given below when measured at the fixed diopter setting for an image placed at the center of the format.

Frequency (lp/mm)MTF

20.97
40.94
60.91
80.85
100.78

3.5.10 Linear distortion. The linear distortion of the biocular eyepiece measured at the fixed diopter setting shall be 5.3 plus or minus 1 percent barrel distortion at the edge of the 40-mm format.

3.5.11 Back focal distance. The back focal distance shall not exceed 0.10 inch for an object projected 400 mm behind (towards the biocular) for the nominal 60-mm exit pupil.

3.6 Environmental conditions.

3.6.1 Temperature shock. The biocular eyepiece shall not be damaged by sudden changes in temperature between -57m to +71m C.

3.6.2 Shock. The biocular eyepiece shall not be damaged when subjected to the shock tests specified in 4.4.2.

3.6.3 Vibration. The biocular eyepiece shall not be damaged when subjected to the vibration tests specified in 4.4.3.

3.6.4 Altitude. The biocular eyepiece shall operate at altitudes up to 10,000 feet above sea level.

3.7 Cleanliness. The biocular eyepiece shall not contain foreign matter, such as dust, dirt, fingerprints, or moisture, that can be detected by visual examination.

3.8 Color. The color of the biocular eyepiece shall be tank white, Number 17875 of FED-STD-595.

3.9 Nameplate. The eyepiece shall have a nameplate marked with the National Stock Number and the manufacturer's name and part number.

FIGURE 5. Example of requirements in performance specification - Continued.

3. REQUIREMENTS

3.1 First article. When specified (see 6.2), a sample shall be subjected to first article inspection in accordance with 4.3.

3.2 Materials and components. The materials and components shall conform to applicable specifications, standards, and patterns required herein. Unless otherwise specified (see 6.2), non-metallic materials used in construction of the inflation assembly shall not have been manufactured more than 24 months prior to the date of delivery, except for rubber products which shall have a cure date more than 12 months prior to the delivery date.

3.2.1 Vest. The vest shall be constructed of the following materials:

a. Aramid mesh. The back and sides shall be constructed of aramid raschel knit mesh conforming to MIL-C-43989.

b. Basic material. The base fabric shall be plain weave, aramid cloth conforming to MIL-C-83429, type II, class 1.

c. Tape, woven binding. The cloth binding for the mesh, casing, and pocket covers shall conform to MIL-T-5038, type III.

d. Fastener tapes. The hook and pile fastener tape shall conform to MIL-F-21840, type II, class 1, and shall be attached as shown on the patterns.

e. Straps and side adjustment webbing. Straps and webbing shall be nylon conforming to MIL-T-5038, type IV.

3.2.2 Inflatable bladder. The inflatable bladder shall consist of the following:

a. Coated cloth. The coated cloth shall be heat-sealable polyurethane coated nylon conforming to SAE AMS 3272, except that tear strengths shall be: 3.75 pounds for warp and 2.75 pounds for fill.

b. Bladder laces. The cord used to lace the bladder to the casing shall be nylon conforming to MIL-C-5040, type III.

c. Adhesive. The adhesive for securing the parts to the bladder shall be chloropene, 3M PN 2141PT, or equal.

FIGURE 6. Example of requirements in detail specification.

3.3 Patterns. Standard patterns to cut working patterns will be furnished by the Government (see 6.3). The working patterns shall be within plus or minus 1/16 inch of the Government patterns. The pattern parts shall be as specified in table I.

TABLE I. Patterns.

Pattern parts	Material	Cut parts
Pocket divider	Green woven material (MIL-C-83429)	2
Flap - right side	Green woven material (MIL-C-83429)	1
Flap - left side	Green woven material (MIL-C-83429)	1
Pocket	Green woven material (MIL-C-83429)	2
Bladder casing front	Green woven material (MIL-C-83429)	1
Bladder casing back	Green woven material (MIL-C-83429)	1
Hood casing	Green woven material (MIL-C-83429)	2
Bladder cylinder holder	Orange coated cloth (SAE AMS 3273)	1
Bladder lamp piece	Orange coated cloth (SAE AMS 3273)	1
Bladder	Orange coated cloth (SAE AMS 3273)	2
Back	Raschel knit material (MIL-C-43989)	1
Front	Raschel knit material (MIL-C-43989)	2
Shield	Plastic (L-P-375, type II, class 1)	1

3.4 Construction.

3.4.1 Cut edges. Cut edges of the uncoated nylon tapes, webbing, and cords shall be seared prior to fabrication of the life preserver to prevent fraying.

3.4.2 Thread. Thread shall be an aramid thread conforming to MIL-T-83193.

FIGURE 6. Example of requirements in detail specification - Continued.

3.4.3 Seams and stitching. Sewing shall conform to FED-STD-751. Each row of stitching shall be straight and parallel to the seam edge. The straightness of the stitching in any row shall be maintained within a tolerance of 1/16 inch. The ends of the stitching shall be backstitched by overlapping on itself by a minimum of 1/2 inch. Thread breaks, skips, and run-offs shall be overstitched not less than 1 inch.

3.4.4 Bartacking. The number of stitches per bartack shall be based proportionally on 1/4 inch long bartack containing a minimum of 14 stitches.

3.4.5 Heat sealing. A radio frequency dielectric heat-sealing process shall be used in the construction of the bladder.

3.5 Performance characteristics.

3.5.1 Adhesion. The adhesion, coated surface to coated surface, shall be 45 pounds per inch of width.

3.5.2 Operation. The life preserver shall inflate to design shape within 10 seconds. There shall be no leakage of carbon dioxide or hindrance to the flow of carbon dioxide from the inflation assembly.

3.5.3 Buoyancy. The inflated life preserver shall support a 32 pound solid steel or lead weight without the entire life preserver assembly sinking below the surface of the water.

3.5.4 Pressure. The pressure in the bladder shall be not less than 4.5 pounds per square inch when tested in accordance with 4.7.2.4.

3.6 Workmanship. Life preservers shall be free of all loose thread, lint, and foreign matter. Life preservers shall be uniform in quality and shall be free from irregularities or defects that could adversely affect performance or durability.

FIGURE 6. Example of requirements in detail specification - Continued.

4. VERIFICATION

4.2 Classification of inspections. The inspection requirements specified herein are classified as follows:

- a. First article inspection (see 4.3).
- b. Conformance inspection (see 4.4).

4.3 First article inspection. First article inspection shall be performed on one complete pumping assembly when a first article sample is required (see 3.1). This inspection shall include the examination of 4.5 and the tests of 4.6.1 through 4.6.6.

4.4 Conformance inspection. Conformance inspection shall include the examination of 4.5 and the tests of 4.6.1 and 4.6.4.

4.5 Examination. Each pumping assembly shall be examined for compliance with the requirements specified in 3.2 through 3.5. Any redesign or modification of the contractor's standard product to comply with specified requirements, or any necessary redesign or modification following failure to meet the specified requirements shall receive particular attention for adequacy and suitability. This element of inspection shall encompass all visual examinations and dimensional measurements. Noncompliance with any specified requirements or presence of one or more defects preventing or lessening maximum efficiency shall constitute cause for rejection.

4.6 Methods of inspection.

4.6.1 Hydrostatic. The pump and fittings shall be subjected to a hydrostatic test gauge pressure of 300 lb/in², for a period of 5 minutes to determine conformance to 3.6.2.

4.6.2 Performance.

4.6.2.1 Test conditions. All data shall be corrected to sea level conditions, barometric pressure 29.92 inches of mercury, for JP-5 and Navy special fuels at 60°F at a specific gravity of 0.80 and 0.98 respectively. Water at a temperature of 60°F to 80°F shall be used as a test fluid.

FIGURE 7. Example of section 4.

4.6.2.2 Pumping. The pump shall be operated as specified herein to determine pump brake horsepower required, pump efficiency, and the net positive suction head required, based on the data obtained. The resultant data shall be used to plot the corrected performance characteristics of the performance chart (see 3.8). The test shall be conducted in accordance with the Hydraulic Institute Standards of the HI, Centrifugal Pump Section. Performance at rates less than those specified in 3.6.1 shall constitute failure of this test.

4.6.3 Operational test. The pumping assembly shall be operated for 24 hours at the rated conditions specified in 3.6.1. The pump shall be examined at the end of each 8 hour interval during the 24 hours. Maintenance and minor adjustments shall be permitted during the examination periods. The pump shall be examined during the operation for leakage through the pump casing or the shaft seals and for malfunction of any component. Any leakage attributes to defects in design, workmanship, materials, or to the malfunction of any component, or inability of the pump to deliver the minimum capacities specified herein shall constitute failure of this test.

4.6.4 Functional test. The pump shall be operated 1 hour at rated capacity under the conditions specified in 3.6.1 and shall be operated as required to verify the functional operation of the controls. The control functions shall be in accordance with the applicable requirements of 3.7.

4.6.5 Tilted position. The pumping assembly shall be operated for not less than 30 minutes while it is positioned 15 degrees from level along the longitudinal centerline of the skid base. Evidence of malfunction or misalignment of components shall constitute failure of this test.

4.6.6 Cold starting. The pumping assembly shall be placed in a cold chamber at 20°F for 48 hours or until stabilization temperature is reached. The system shall demonstrate three successive starting cycles without the use of external power. Sufficient time shall be allowed so that components can return to 20°F equilibrium.

FIGURE 7. Example of section 4 - Continued.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. The compressors covered by this specification are intended for use in shipboard fire fighting applications. They are not for use with potable water.

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of this specification.
- b. Type and grade (see 1.2).
- c. Issue of DoDISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.2.1 and 2.2.2).
- d. When first article is required (see 3.1).
- e. Zinc plating, if required (see 3.2).
- f. Whether lot A or B testing is required (see 4.2.1).

6.3 Supersession data. This specification supersedes MIL-C-1567A dated 31 March 1969, MIL-C-4585D dated 1 June 1956, and class 3 of MIL-C-9631B dated 23 May 1969.

6.4 Part or Identifying Number (PIN). The PIN to be used for compressors acquired to this specification are created as follows:

<u>M</u>	<u>28970-</u>	<u>X</u>	<u>X</u>
Prefix for military specification	Specification number	Type (see 1.2)	Grade (see 1.2)

6.5 Subject term (key word) listing.

Cadmium plating
Compressor
Firefighting
Pump

6.6 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

FIGURE 8. Example of section 6.

MIL-DTL-12345
APPENDIX A

PROCEDURE FOR ULTRASONIC INSPECTION OF
COMPOSITION 13 BAR STOCK

A.1 SCOPE

A.1.1 Scope. The appendix details the procedure for ultrasonic inspection of composition 13 bar stock selected for the manufacture of bearing balls. This appendix is a mandatory part of this specification.

A.2 APPLICABLE DOCUMENTS

(This section is not applicable to this appendix.)

A.3 PROCEDURE

A.3.1 Calibration standard. Reference pieces for calibration shall be of the same material, metal travel distance, surface finish, and ultrasonic response as the bar stock being tested.

A.3.1.1 Reference test piece for bar stock 5/8-inch to 1-1/2-inch diameter. The reference test piece shall be a bar of at least 3 feet in length. For near zone testing, metal travel shall be 4/10 the diameter and 9/10 the diameter of the test piece to flat bottom holes (FBHs) 0.02 inches in diameter. For far zone testing, metal travel shall be 6/10 the diameter and 1/10 the diameter of the test piece to FBHs 0.02 inches in diameter.

A.3.1.2 Reference test piece for bar stock 1/2-inch to 5/8-inch diameter. The reference test piece shall be a bar of at least 3 feet in length. For near zone testing, metal travel shall be 4/10 the diameter and 9/10 the diameter of the test piece to FBHs 0.02 inches in diameter of 0.062-inch depth. For far zone testing, metal travel shall be 6/10 the diameter and 1/10 the diameter of the test piece with metal travel 0.06 inch to a FBH of 0.02 inch diameter.

A.3.1.3 Reference test piece for bar stock less than 1/2-inch diameter. For bar stock less than 0.5-inch diameter, only one FBH providing 1/2 diameter travel shall be required.

FIGURE 9. Example of an appendix.

MIL-DTL-12345
APPENDIX AA.3.2 Test set-up.

A.3.2.1 Longitudinal scan. While maintaining correct water path, obtain a 2-inch signal from the highest attenuated 0.02-inch FBH. Adjust sensitivity and distance amplitude control to bring near and far FBHs within 10 percent of a 2-inch amplitude indication. Compatibility between reference block and the material to be tested shall be established by comparing the first unsaturated back reflection from the block with the corresponding back reflection from the material to be tested. Gain shall be set to give an 80 percent of screen signal from the FBH with depth of 6/10 the diameter of the test piece. Compatibility shall be checked in at least three well-separated areas on the material to be tested. The gate width for near zone testing shall be set to include response from FBH with depth of 1/10 and 6/10 test piece diameter. The gate width for far zone testing shall be set to include response from FBH with depth of 4/10 and 9/10 test piece diameter. The alarm sensitivity shall be set to assure 100 percent of a 0.02-inch diameter FBH inspection level.

A.3.2.2 Loss of backface. Set instrument so the first backface reflection from the full round reference block is 80 percent of screen saturation. The first backface reflection shall be gated and set alarm at 50 percent or less of loss in backface signal. Inspect and evaluate loss of backface areas.

A.3.2.3 Angle scan test. Position transducer over angle reference notch area for maximum response. Rotate reference standard so center of standard block and notch are on a horizontal plane. Adjust gain to obtain a 2-inch signal and adjust flaw alarm for a 1-inch signal. Gate width shall be set to include the area at which the signal from the reference notch is detected.

A.4 Acceptance levels.

A.4.1 Longitudinal scan. Discontinuities in excess of the response from a 0.2-inch diameter FBH at the estimate discontinuity depth shall not be acceptable.

A.4.2 Loss of back reflection. Any loss of back reflection in excess of 50 percent of full saturation of the screen shall be considered unacceptable with the instrument set so the first back reflection from the correct test block is at 80 percent of the screen adjusted for nonlinearity.

FIGURE 9. Example of an appendix - Continued.

INCH-POUND

MIL-DTL-63540B
SUPPLEMENT 1
29 June 1995

DETAIL SPECIFICATION
(use the heading "PERFORMANCE SPECIFICATION" if appropriate)

STUD, SELF-LOCKING,
GENERAL SPECIFICATION FOR

This supplement forms a part of MIL-DTL-63540B, dated 29 June 1995.

SPECIFICATION SHEETS

MIL-DTL-63540/1 - Stud, Self-Locking, Flush Head, Ribbed Clinch Type
MIL-DTL-63540/2 - Stud, Self-Locking, Flush and Protruding Head
MIL-DTL-63540/3 - Stud, Self-Locking, Flush Head, Hex Clinch Type
MIL-DTL-63540/4 - Stud, Self-Locking, Concealed Head, Knurled Clinch Type
MIL-DTL-63540/5 - Stud, Self-Locking, Concealed Head, Hex Clinch Type
MIL-DTL-63540/6 - Stud, Self-Locking, Non-Flush, Ribbed Clinch Type
MIL-DTL-63540/7 - Stud, Self-Locking, Broaching Type

Preparing activity:
Army - AR
Agent:
DLA - IS

AMSC N/A

1 of 1

FSC 5307

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

FIGURE 10. Example of a supplement.

INCH-POUND

MIL-PRF-28861
AMENDMENT 3
14 March 1995
SUPERSEDING
AMENDMENT 2
4 August 1983

PERFORMANCE SPECIFICATION
(use the heading "DETAIL SPECIFICATION" if appropriate)

FILTERS AND CAPACITORS, RADIO FREQUENCY/
ELECTROMAGNETIC INTERFERENCE SUPPRESSION,
GENERAL SPECIFICATION FOR

This amendment forms a part of MIL-PRF-28861A, dated 17 December 1981, and is approved for use by all Departments and Agencies of the Department of Defense.

PAGE 5

* 3.6.6: Delete and substitute:

"3.6.6 Capacitor elements (Class S filters only). Capacitor elements used in the construction of Class S filters shall be manufactured and tested to MIL-C-123 as follows:

- a. Capacitors shall meet the applicable requirement of MIL-C-123, except for qualification.
- b. Capacitors shall be manufactured with lot control, in-process controls, and the groups A and B inspections of MIL-C-123. The group B thermal shock test and subsequent life test shall not be performed."

PAGE 19

4.6.3d, line 2: Delete "30mA minimum" and substitute "35 mA maximum."

AMSC N/A

1 of 2

FSC 59GP

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

FIGURE 11. Example of an amendment.

4.6.11: Add the following: "Lead wires specified in accordance with table VII shall be the smaller of the wire specified in table VII or the actual lead wire size of the filter terminal."

* Add as new paragraph:

"B.3.1.1 Optional qualification for Class S filters. The following option for Class S qualification is available to any manufacturer who has a product currently qualified under this specification. Products proposed for qualification under this procedure shall meet the following requirements:

- a. Product shall pass the Class S audit.
- b. Product shall meet Class S designated product control."

NOTE: The margins of this amendment are marked with asterisks to indicate where changes from the previous amendment were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous amendment.

Custodians:

Army - ER
Navy - EC
Air Force - 85
DLA - ES

Preparing activity:

DLA - ES
(Project 5915-0303)

Review activities:

Army - AR, AT, AV, ME, MI
Navy - CG, MC, AS, OS, SH
Air Force - 11, 17, 19, 99

FIGURE 11. Example of an amendment - Continued.

INCH-POUND

MIL-PRF-2819F
INTERIM AMENDMENT 3
14 July 1995

PERFORMANCE SPECIFICATION
(use the heading "DETAIL SPECIFICATION" if appropriate)

INSULATION BLOCK, THERMAL

This interim amendment is approved for use within the Naval Sea Systems Command, Department of the Navy, with MIL-PRF-2819F, dated 17 December 1989.

PAGE 3

3.7, last line: Delete "1 hour" and substitute "2 hours".

PAGE 11

4.5.10: Delete.

Preparing activity:
Navy - SH
(Project 5640-0047)

AMSC N/A

1 of 1

FSC 5640

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

FIGURE 12. Example of an interim amendment.

NOTICE OF
VALIDATION

METRIC

MIL-DTL-12345C
NOTICE 1
12 August 1995

DETAIL SPECIFICATION
(use the head "PERFORMANCE SPECIFICATION" if applicable)

ALUMINUM ALLOYS

MIL-DTL-12345C, dated 5 June 1980, has been reviewed and determined to be valid for use in acquisition.

Custodians:
Army - MR
Navy - AS
Air Force - 11

Preparing activity:
Army - MR

AMSC N/A

FSC 9510

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

FIGURE 13. Example of a validation notice.

NOTICE OF
VALIDATION

METRIC

MIL-DTL-12345C
NOTICE 1
12 August 1995

DETAIL SPECIFICATION
(use the head "PERFORMANCE SPECIFICATION" if applicable)

ALUMINUM ALLOYS

MIL-DTL-12345C remains inactive for new design, however, the document is valid for acquisition when needed.

Custodians:
Army - MR
Navy - AS
Air Force - 11

Preparing activity:
Army - MR

AMSC N/A

FSC 9510

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

FIGURE 14. Example of a validation notice for inactive for new design.

NOTICE OF GROUP VALIDATION

METRIC

MIL-DTL-54321
NOTICE 1
12 August 1995

DETAIL SPECIFICATION
(use the head "PERFORMANCE SPECIFICATION" if applicable)

RESISTORS, FIXED, FILM, INSULATED
GENERAL SPECIFICATION FOR

The following specification sheets of MIL-DTL-54321 have been reviewed and are determined to be valid for use in acquisition.

<u>Document</u>	<u>Date</u>	<u>Inactive Status</u> (DO NOT INCLUDE THIS COLUMN IF NOT APPLICABLE)
MIL-DTL-54321/6A	15 June 1988	-----
MIL-DTL-54321/7A	15 June 1988	-----
MIL-DTL-54321/8A	15 June 1988	-----
MIL-DTL-54321/25	15 June 1977	Inactive, but valid
MIL-DTL-54321/33B	25 July 1990	-----
MIL-DTL-54321/37B	5 August 1988	-----
MIL-DTL-54321/38	5 August 1988	-----

Preparing activity:
Air Force - 11

AMSC N/A

FSC 5905

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

FIGURE 15. Example of a group validation notice.

NOTICE OF INACTIVATION
FOR NEW DESIGN

INCH-POUND

MIL-DTL-22684/5A
NOTICE 1
20 May 1995

DETAIL SPECIFICATION SHEET
(use the heading "PERFORMANCE SPECIFICATION SHEET" if applicable)

RESISTORS, FIXED, FILM, INSULATED,
STYLE RL07

This notice should be filed in front of MIL-DTL-22684/5A, dated 7 September 1967.

MIL-DTL-22684/5A is inactive for new design and is no longer used, except for replacement purposes.

The Qualified Products List (QPL) associated with this inactive for new design specification will be maintained until acquisition of the product is no longer required, whereupon the specification and QPL will be canceled.

Preparing activity:
Air Force - 11

(Project 5905-8620)

AMSC N/A

FSC 5905

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

FIGURE 16. Example of an inactive for new design notice.

NOTICE OF
CANCELLATION

INCH-POUND

MIL-DTL-13701B
NOTICE 1
12 August 1995

DETAIL SPECIFICATION
(use the head "PERFORMANCE SPECIFICATION" if applicable)

COMPRESSORS, RECIPROCATING, POWER DRIVEN
(FOR DIESEL ENGINE STARTING)

MIL-DTL-13701B, dated 31 August 1971, is hereby canceled without replacement.

Custodians:
Army - ME
Navy - SH
Air Force - 99

Preparing activity:
Army - ME
(Project 4310-1234)

AMSC N/A

FSC 4310

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

FIGURE 17. Example of a cancellation notice.

NOTICE OF
CANCELLATION

INCH-POUND

MIL-DTL-45207B
NOTICE 1
12 August 1995

DETAIL SPECIFICATION
(use the heading "PERFORMANCE SPECIFICATION" if applicable)

MAGNESIUM ALLOY (K1A), SAND CASTINGS

MIL-DTL-45207B, dated 25 May 1966, is hereby canceled. Future acquisition for this material should refer to the portions of ASTM B 80, "Magnesium Alloy Sand Castings," which pertain to alloy designation K1A (UNS M18010).

(Application for copies of ASTM publications should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103-1187.)

Custodians:
Army - MR
Navy - AS
Air Force - 99

Preparing activity:
Army - MR
(Project MECA-0008)

Review Activities:
Navy - SH
Air Force - 11

AMSC N/A

AREA MECA

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

FIGURE 18. Example of a cancellation notice with superseding document.

**NOTICE OF GROUP
CANCELLATION**

INCH-POUND

MIL-DTL-54321
NOTICE 1
12 August 1995

DETAIL SPECIFICATION
(use the heading "PERFORMANCE SPECIFICATION" if applicable)

**RESISTORS, FIXED, FILM, INSULATED
GENERAL SPECIFICATION FOR**

The following specification sheets of MIL-DTL-54321 are hereby canceled:

<u>Document</u>	<u>Date</u>	<u>Replacement</u>
MIL-DTL-54321/6A	15 June 1988	None
MIL-DTL-54321/7A	15 June 1988	None
MIL-DTL-54321/8A	15 June 1988	None
MIL-DTL-54321/25	15 June 1977	None
MIL-DTL-54321/33B	25 July 1990	MIL-DTL-67890/4
MIL-DTL-54321/37B	5 August 1988	None
MIL-DTL-54321/38	5 August 1988	None

Custodians:

Army - ER

Navy - EC

Air Force - 11

Preparing activity:

Air Force - 11

(Project 5905-B620)

Review Activities:

Navy - AS, SH

DLA - ES

AMSC N/A

FSC 5905

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

FIGURE 19. Example of a group cancellation notice.

NOTICE OF
REINSTATEMENT

INCH-POUND

MIL-DTL-28719
NOTICE 2
13 August 1995
SUPERSEDING
NOTICE 1
3 June 1976

DETAIL SPECIFICATION
(use the heading "PERFORMANCE SPECIFICATION" if applicable)

HEADERS, HERMETICALLY SEALED

MIL-DTL-28719, dated 31 March 1970, is hereby reinstated and may be used for acquisition.

Custodians:
Army - ER
Navy - OS
Air Force - 85

Preparing activity:
Navy - OS

(Project 5940-1120)

AMSC N/A

FSC 5940

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

FIGURE 20. Example of a reinstatement notice.

NOTICE OF
REACTIVATION

INCH-POUND

MIL-DTL-55302/54B
NOTICE 2
29 May 1995
SUPERSEDING
NOTICE 1
17 October 1991

DETAIL SPECIFICATION SHEET

(use the heading "PERFORMANCE SPECIFICATION SHEET" if applicable)

CONNECTORS, PRINTED CIRCUIT SUBASSEMBLY AND ACCESSORIES:
PLUG, STRAIGHT-THRU, HERMAPHRODITIC CONTACT FOR
PRINTED WIRING BOARDS (0.100 SPACING)

MIL-DTL-55302/54B, dated 19 March 1981, is hereby reactivated and may be used for either new or existing design acquisition.

Custodians:
Army - CR
Navy - EC
Air Force - 17
DLA - ES

Preparing activity:
DLA - ES

(Project 5935-1120)

AMSC N/A

FSC 5935

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

FIGURE 21. Example of a reactivation notice.

INCH-POUND

MIL-DTL-915/21E

18 June 1995

SUPERSEDING

MIL-C-915/21D

5 April 1973

DETAIL SPECIFICATION SHEET

(use the heading "PERFORMANCE SPECIFICATION SHEET" if applicable)

CABLE, ELECTRICAL, 125 VOLTS, TYPE TRXF

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall consist of this specification sheet and the issue of MIL-DTL-915 listed in that issue of the Department of Defense Index of Specifications and Standards (DoDISS) specified in the solicitation.

REQUIREMENTS:

Qualification not required.

Construction (non-watertight)

First - Copper conductor, uncoated, class M stranding

Second - Separator

Fifth - Polychloroprene jacket

EXAMINATION AND TESTS:

Basic electrical:

Voltage withstand - conductor to ground,
volts, root mean square, minimum...

Requirements

1200

Insulation resistance 1 - megohms/1000
feet, minimum conductor to water...

350

AMSC N/A

1 of 2

FSC 6145

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

FIGURE 22. Example of a specification sheet.

MIL-DTL-915/21E

EXAMINATION AND TESTS: (continued)

	<u>Requirements</u>
<u>Group A:</u>	
Visual and dimensional.....	No failure
<u>Group B:</u>	
Cold bending, cable - at minus 2°C, two turns around mandrel with diameter twice that of specimen....	No damage
Jacket (cable)	
Elongation - percent, minimum.....	300
Set - inch, maximum.....	3/8
<u>Group C:</u>	
Flammability - inches, maximum.....	2

UNIT ORDERING LENGTH:

All sizes 1000 feet (nominal)

CHANGES FROM PREVIOUS ISSUE: The margins of this specification are marked with asterisks to indicate where changes from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue.

Custodians:

Army - MI

Navy - SH

Air Force - 85

Preparing activity:

Navy - SH

(Project 6145-0885)

Review activities:

Army - CR, ER

Navy - EC

Air Force - 99

DLA - IS

FIGURE 22. Example of a specification sheet - Continued.

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MIL-STD-961D

CONCLUDING MATERIAL

Custodians:

Army - AR
Navy - SH
Air Force - 11
DLA - DH

Preparing activity:

OSD - SO
(Project SDMP-0015)

Review activities:

Army - AL, AT, AV, CE, CR, EA, ER, GL, LM.
MD, ME MI, MR, MT, SC, SM, TE, TM
Navy - AS, CG, EC, MC, OS, SA, YD
Air Force - 10, 16, 17, 19, 22, 35, 45, 50, 68,
69, 70, 71, 79, 82, 84, 85, 99
DLA - CS, CT, DM, DP, ES, GS, IS, PS, SS
DISA
DMA
DNA

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

I RECOMMEND A CHANGE:

1. DOCUMENT NUMBER
MIL-STD-961D

2. DOCUMENT DATE (YYMMDD)
950322

3. DOCUMENT TITLE

Defense Specifications

4. NATURE OF CHANGE (Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)

5. REASON FOR RECOMMENDATION

6. SUBMITTER

a. NAME (Last, First, Middle Initial)

b. ORGANIZATION

c. ADDRESS (Include Zip Code)

d. TELEPHONE (Include Area Code)

(1) Commercial

(2) AUTOVON

(if applicable)

7. DATE SUBMITTED
(YYMMDD)

8. PREPARING ACTIVITY

a. NAME Office of the Assistant Secretary
of Defense (Economic Security)
Standardization Program Division

b. TELEPHONE (Include Area Code)

(1) Commercial

(2) AUTOVON

703-756-2340

289-2340

c. ADDRESS (Include Zip Code)
5203 Leesburg Pike, Suite 1403
Falls Church, VA 22041-3466

IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT:
Defense Quality and Standardization Office
5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3466
Telephone (703) 756-2340 AUTOVON 289-2340

NOTICE OF
CHANGE

NOT MEASUREMENT
SENSITIVE

MIL-STD-961D
NOTICE 1
22 August 1995

DEPARTMENT OF DEFENSE
STANDARD PRACTICE

DEFENSE SPECIFICATIONS

TO ALL HOLDERS OF MIL-STD-961D:

1. THE FOLLOWING PAGES OF MIL-STD-961D HAVE BEEN REVISED AND SUPERSEDE
THE PAGES LISTED:

NEW PAGE	DATE	SUPERSEDED PAGE	DATE
Cover page	22 August 1995	Cover page	22 March 1995
ii	22 August 1995	ii	22 March 1995
iii	22 August 1995	iii	22 March 1995
iv	22 August 1995	iv	22 March 1995
1	22 August 1995	1	22 March 1995
2	22 August 1995	2	22 March 1995
19	22 August 1995	19	22 March 1995
20	22 August 1995	20	22 March 1995
27	22 August 1995	27	22 March 1995
28	22 March 1995	28	Reprinted without change
51	22 March 1995	51	Reprinted without change
52	22 August 1995	52	22 March 1995
59	22 August 1995	59	22 March 1995
60	22 August 1995	60	22 March 1995
61	22 August 1995	61	22 March 1995
62	22 August 1995	62	22 March 1995
73	22 August 1995	73	22 March 1995
74	22 August 1995	74	22 March 1995
93 through 128*	22 August 1995	New pages	-----

* Pages 93 through 99 in MIL-STD-961D are the index and concluding material. These new pages do not replace the index and concluding material, but are to be placed in front of the index. Document users may renumber the index and concluding material pages, if desired.

AMSC D7162

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MIL-STD-961D
NOTICE 1

2. RETAIN THIS NOTICE AND INSERT BEFORE TABLE OF CONTENTS.

3. Holders of MIL-STD-961D will verify that page changes and additions indicated above have been entered. This notice page will be retained as a check sheet. This issuance, together with appended pages, is a separate publication. Each notice is to be retained by stocking points until the standard is completely revised or canceled.

Custodians:

Army - AR
Navy - SH
Air Force - 11
DLA - DH

Preparing activity:

OSD - SO
(Project SDMP-0019)

Review activities:

Army - AL, AT, AV, CE, CR, EA, ER, GL, LM,
MD, ME, MI, MR, MT, SC, SM, TE, TM
Navy - AS, CG, EC, MC, OS, SA, YD
Air Force - 10, 16, 17, 19, 22, 35, 45, 50, 68, 69,
70, 71, 79, 82, 84, 85, 99
DLA - CS, CT, DM, DP, ES, GS, IS, PS, SS
DISA - DC
DMA - MP
DNA - DS
OSD - DO

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MIL-STD-961D
22 March 1995

SUPERSEDING
(See 6.6)

**DEPARTMENT OF DEFENSE
STANDARD PRACTICE
DEFENSE SPECIFICATIONS**



AMSC D7117

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SUPERSEDES COVER PAGE OF MIL-STD-961D

FOREWORD

1. This standard is approved for use by all Departments and Agencies of the Department of Defense (DoD).

2. DoD 4120.3-M, "Defense Standardization Program Policies and Procedures," discusses the different types of specifications used by the DoD. This standard establishes practices for developing performance specifications, detail specifications, and program-unique specifications prepared by or for the DoD. This standard covers the requirements for "standard" performance and detail specifications that are used on multiple programs or applications. This standard also covers the requirements for program-unique performance and detail specifications that are used for a single program or system with little or no potential for use with other programs or systems. The requirements for program-unique specifications were previously covered by MIL-STD-490, which this standard supersedes.

3. It is DoD policy to give first preference to developing and using performance specifications. If it is not practical or effective to use a performance specification, a non-Government standard should be used. If it is not practical or effective to develop and use a performance specification or non-Government standard, a detail specification may be developed and used, but only as a last resort.

4. There are two primary objectives for the changes to this standard. First, for the DoD to meet its military needs in the current economic and political environment, it must increase access to an expanded industrial base that can meet defense needs at lower costs with state-of-the-art commercial technology. The changes herein will move the DoD to greater use of performance-based specifications and commercial-type specifications and standards. The second objective is to ensure that the contents of specifications cover only the requirements for a product (preferably in terms of performance) and the tests to verify that those requirements are met. Specifications should not include contractual provisions, such as data requirements, quality assurance, packaging, or contract administration.

5. Proper preparation and use of specifications is a difficult task requiring careful analysis and good judgment. The following points highlight areas of policy emphasis, intent, or changes. Areas where actual problems have been encountered on specific documents are also included. They are intended as a "checklist" to assist in document preparation.

a. For commercial products, consideration should first be given to using or developing a non-Government standard or including DoD requirements in an existing non-Government standard, or developing or revising a commercial item description.

b. Documents should be structured and formatted to categorize requirements as precisely as possible. Requirements that are generally necessary but can occasionally be removed should be written so that they can be tailored out while leaving other requirements unaffected. Requirements that are necessary only in certain instances should be written so that they can be tailored in. There is sufficient flexibility to make adjustments which may be required for a particular document.

c. Detailed application guidance should be provided in the "Notes" section of each document. The purpose of this guidance is to provide noncontractual information on when and how to use the document. Information such as the following is recommended: (1) how to apply the document to different contract types and different program phases, (2) the source of and flexibility inherent with specific document requirements, (3) guidance on what is required to satisfy document requirements, (4) the extent of Government review and approval, and (5) the relationship between the particular document and other related documents in the acquisition process.

d. A carefully documented, permanent record should be maintained by the specification preparing activity of the source and reason behind particular requirements and changes to requirements. The rationale (measurement, testing, judgment, etc.) behind a specific numeric level is one example of what the record should contain. Issues and controversial areas during the coordination process should be noted, and it may be desirable to summarize these issues and areas in the "Notes" section of the document and solicit feedback as experience develops. This record should provide a basis for related application guidance and a history useful in future document revisions.

e. Clear distinction should be made between requirements portions and guidance portions of documents. Careful attention to use of the words "should" (guidance language) and "shall" (requirement language) is important.

f. Requirement statements should be clear and unambiguous. One test to apply in preparing a document is to ask what will a contractor have to do as a result of this requirement. The answer should be apparent to both the Government and the contractor.

g. To the extent possible, requirements should be stated in performance or "what-is-necessary" terms, as opposed to telling a contractor "how to" perform a task.

h. Care should be taken to avoid unnecessary reference to other documents and document "tiering". References should be justified. When only a portion of another document needs to be referenced, only that portion should be referenced. Document preparers are cautioned that only first tier references are contractually binding. Critical requirements appearing in references below the first tier should be directly stated in the specification.

i. Ways to increase the use of commercial products that will satisfy Government requirements should be an important consideration during document preparation or revision.

j. Data item descriptions should be developed and circulated with documents during the draft coordination stages when applicable.

k. Feedback on the success or difficulties (benefits and costs) encountered in the application of the document on specific contracts should be encouraged. Such feedback may be made by DD Form 1426, by Material Deficiency Reports, or by letter or other appropriate forms.

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l. Efforts should be made to encourage and obtain inputs and perspectives outside of a document's normal proponent group (such as the quality, reliability, or packaging communities).

m. Care should be taken to ensure that industry comments are requested during the draft stages of document preparation and that proper Government coordination occurs.

n. The figures appearing at the back of this standard are fictitious and are used only as examples to illustrate format. If there is any conflict between the text and the figures, the text applies.

6. This revision more strongly reaffirms the DoD's policy on prohibiting fixed levels of defects, such as acceptable quality levels (AQLs) and lot tolerance percent defectives (LTPDs), as firm specification requirements. Such specification requirements imply that defects are allowable, institutionalize the process of accepting non-conforming materiel, and do not motivate contractors to improve product quality. In addition, AQLs and LTPDs are not requirements or tests for the product being acquired. They reflect levels of risk that the customer is willing to take when acquiring a product. As such, AQLs and LTPDs should not be part of the specification, but may be part of the quality assurance provisions in the contract.

7. Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Office of the Assistant Secretary of Defense (Economic Security), Standardization Program Division, 5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3466, by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

1. SCOPE

1.1 Scope. This standard establishes the formats, contents, and procedures for the preparation of performance specifications, detail specifications, program-unique specifications, and associated documents, prepared either by Government activities or under contract (see 6.3 and 6.4). Associated documents for performance and detail specifications include associated specifications, specification sheets, supplements, revisions, amendments, and notices. Associated documents for program-unique specifications include revisions, drawings, software design descriptions, and software listings.

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 4 and 5 of this standard. This section does not include documents cited in other sections of this standard or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements documents cited in sections 4 and 5 of this standard, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation (see 6.2).

STANDARDS

FEDERAL

FED-STD-376 - Preferred Metric Units for General Use by the Federal Government.

DEPARTMENT OF DEFENSE

MIL-STD-12 - Abbreviations for Use on Drawings, and in Specifications, Standards and Technical Documents.

DOD-STD-963 - Data Item Descriptions (DIDs), Preparation of.

MIL-STD-1806 - Marking Technical Data Prepared by or for the Department of Defense.

HANDBOOK

DEPARTMENT OF DEFENSE

MIL-HDBK-248 - Acquisition Streamlining.

(Unless otherwise indicated, copies of the above specifications, standards, and handbooks are available from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.2.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

DoDISS	-	Department of Defense Index of Specifications and Standards.
DoD 5010.12-L	-	Acquisition Management System and Data Requirements Control List (AMS DL).
SD-1	-	Standardization Directory.
SD-14	-	Listing of Toxic Chemicals, Hazardous Substances, and Ozone-Depleting Chemicals.
Cataloging Handbook H2-1	-	Federal Supply Classification, Part 1, Groups and Classes.
Cataloging Handbook H6	-	Federal Item Name Directory for Supply Cataloging.
United States Government Printing Office (GPO) Style Manual.		

(Copies of DoD 5010.12-L, SD-1, and SD-14 are available from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094. Copies of Cataloging Handbooks H2-1 and H6 are available from the Commander, Defense Logistics Services Center, Battle Creek, MI 49017-3084. Copies of the GPO Style Manual are available from the Superintendent of Documents, U.S. Government Printing Office, North Capitol & "H" Streets, N.W., Washington, DC 20402-0002. Copies of the DoDISS are available on a yearly subscription basis either from the Government Printing Office or the DoDSSP Subscription Services, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.3 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted are those listed in the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS are the issues of the documents cited in the solicitation (see 6.2).

only to the specific paragraph number. The word "paragraph" shall not appear, for example, "(see 3.1.1)".

4.21 References to other documents. Judicious referencing of other documents in specifications is a valuable tool that eliminates the repetition of requirements and tests adequately set forth elsewhere. However, unnecessary or untailored referencing of other documents can lead to increased costs, excessive tiering, ambiguities, and compliance with unneeded requirements. The following rules shall apply when referencing another document as a requirement in a specification and listing it in section 2 as an applicable document:

a. If the information is less than a page and if it is not a violation of copyright provisions (see 4.3.4), it should be included directly into the specification without referencing another document.

b. Referenced documents shall be current (not canceled or superseded), approved for use (not drafts), and readily available.

c. Unless the entire referenced document applies, it shall not be cited in total, but shall be tailored by citing the appropriate sections of the document, such as specific types, grades, or classes; test methods; or definitive descriptions (for example, "the painting requirements of MIL-STD-000"). Do not reference specific paragraph, table, or figure numbers from other documents since revisions to these documents often result in renumbering.

d. References shall not be made to the following types of documents:

(1) Directives, instructions, regulations, and other types of policy documents, except in section 6 for information only.

(2) Data Item Descriptions, except as allow by 4.3 and 5.3.6.5.

(3) Management, manufacturing, and process type documents that should be cited in contracts. A known list of these documents is identified in the SD-1, and these documents shall not be referenced. However, such a list can never be totally complete. Document preparers shall not reference any documents that do not comply with the intent of this restriction.

(4) Specifications, standards, drawings, or other documents that contain proprietary or unique design solutions that would restrict competition, or that would not be readily available to competing contractors because they are owned by a particular company.

4.22 Preparation of documents. Documents shall be single spaced with a margin of 1 inch at the sides, top, and bottom of the page. Documents sent to the DoDSSP for printing, distribution, and indexing in the DoDISS shall be submitted on a 3.5" diskette, in Printer Description Language or Portable Document Format. A one-sided paper copy of the document shall also be submitted.

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5.2.6 DD Form 1426 note. Specifications in six-section format shall include the following note on the bottom center of the first page immediately above the FSC designation. The note shall be boxed for emphasis.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: (insert name and address of the preparing activity) by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

5.2.7 Designation of federal supply class (FSC), group (FSG), or area assignment. The specification shall be assigned a FSC or FSG as defined in the Cataloging Handbook H2-1, Part 1, or a standardization area as defined in the SD-1. The applicable FSC, FSG, or area assignment shall appear in the lower right corner of the first page of the specification below the beneficial comments box. The symbol "GP" shall follow the FSG number, (for example, 59GP) when the FSG number identifies the assignment or project. Specifications covering more than one FSC shall be designated with the applicable FSG or with the appropriate standardization area if more than one FSG is covered. Dual or multiple FSC, FSG, or standardization area designations shall not be used.

5.2.8 AMSC number. All standardization documents shall reflect either an AMSC number or "AMSC N/A" at the bottom left of the first page, below the beneficial comments box. The following indicates which documents require an AMSC number and which ones require "AMSC N/A."

- a. With the exceptions noted in b. and c. below, specifications shall be marked "AMSC N/A."
- b. Data product specifications require assignment of an AMSC number (see 4.3.1).
- c. Technical manual specifications require assignment of an AMSC number (see 4.3.2).
- d. Amendments require either the same AMSC number or "AMSC N/A" as shown on the document being amended. While amendments do not require clearance, a copy of all amendments bearing an AMSC number shall be sent to the AMSDL Clearance Office concurrent with submittal of the manuscript to the DoDSSP for printing.
- e. Validation notices, cancellation notices, reinstatement notices, inactive for new design notices, and supplements require "AMSC N/A."

5.2.9 Distribution statement. All standardization documents prepared by the DoD will cite the appropriate distribution statement in accordance with MIL-STD-1806 on the line immediately below the FSC, FSG, or area designation flush with the left hand margin. The distribution statement shall be placed on all coordination drafts, as well as the camera ready copy of the document. Since most specifications do not contain sensitive technical information, the following distribution statement is the one that will usually be used:

"DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited."

5.3 Sectional arrangement of specifications. Except for specification sheets (see 5.12), specifications shall contain six numbered sections, titled and numbered as shown below. A table of contents and cover sheet shall not be used. For lengthy documents, an alphabetical index may be used (see 5.6).

1. SCOPE
2. APPLICABLE DOCUMENTS
3. REQUIREMENTS
4. VERIFICATION
5. PACKAGING
6. NOTES

Subject matter shall be kept within the scope of the sections so that the same kind of requirements or information will always appear in the same section of every specification. If there is no information pertinent to a section, the following shall appear below the section heading:

"This section is not applicable to this specification."

5.3.1 SECTION 1.

5.3.1.1 Scope. The statement of the scope shall repeat the item name and its modifiers and consist of a clear, concise abstract of the coverage of the specification and may include, whenever necessary, information as to the use of the item other than specific detailed applications covered under "Intended use" (section 6). This brief statement shall be the beginning paragraph in section 1 of the six-section specification. As applicable, reference may be made to information contained in section 6 (see figure 3). The scope shall not contain requirements. Figures shall not be included in the scope.

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5.9.10 Insertion of paragraphs, figures, and tables. When new paragraphs, figures, or tables are added to the specification, they should be numbered in such a way that renumbering of existing paragraphs, figures, and tables is not necessary. For example:

<u>Existing</u>	<u>Added</u>	<u>Existing</u>
Table II	Table II-1	Table III
Figure 2	Figure 2A	Figure 3
Paragraph 5.11	Paragraph 5.11.1	Paragraph 5.12

5.9.11 Successive (cumulative) amendments. Amendments are cumulative and each successive amendment shall be written to completely supersede the previous amendment.

5.9.12 Successive interim amendments. Except for those requirements that are being changed, each successive interim amendment shall consolidate information contained in the previous interim amendment.

5.9.13 Page numbering. The first page shall indicate the total number of pages in the amendment and the page number (such as, 1 of 3 or 1 of 1) at the bottom center of page. All remaining pages of multi-page amendments shall be successively numbered with Arabic numerals at the bottom center of page. Insertable replacement pages shall carry the page number of the page being replaced and, for the purpose of page numbering only, shall not be counted as part of the amendment.

5.9.14 Concluding material. The concluding material of the specification shall be shown after the text of the amendment in the same manner as in the basic specification, including the project number for the amendment action. For interim amendments, the preparing activity, review activities, if any, of the limited coordination department, and project number shall be listed.

5.9.15 Changes from the previous amendment. An asterisk or vertical line shall be placed in the left margin opposite the change to denote a change from the previous amendment (on figures, the asterisk shall be placed as near the actual change as possible, so that it can be readily identified). The following note shall be added at the end of the amendment preceding the concluding material:

"The margins of this amendment are marked with an asterisk (or vertical lines) to indicate where changes from the previous amendment were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous amendment."

5.10 Notices.

5.10.1 Purpose. Notices are used to inactivate for new design, cancel, reinstate, reactivate, or validate specifications. Notices shall not be used to transmit revisions or amendments. Notices completely supersede all previous notices.

5.10.2 Validation notice. A validation notice shall be prepared to indicate that a specification is technically valid without change. A validation notice shall be issued without a project number and without formal coordination. The notice is required at the time of the five year overage review if the document is determined to be valid and in compliance with defense acquisition and standardization policies. Technical changes shall not be made on the validation notice, but the preparing activity shall update the custodians, review activities, and other interested activities on the notice. The format of the notice shall be similar to that shown on figure 13, figure 14 for validation of inactive for new design documents, or figure 15 for a group validation. The actual wording may vary to indicate the reason for the notice, however, it shall include a definite statement that the document as approved is still valid for acquisition without change.

5.10.3 Inactive for new design notice. An inactive for new design notice shall be prepared to indicate that an item or process is prohibited for use in new design and is used only in existing assemblies or units. Items or processes so designed may be used for new assemblies or units developed for existing design contracts where the inactive item or process is being used for existing designs in the same contract, or in assemblies for existing units or systems required under future contracts. Superseding documents for new design application shall be referenced in the notice when applicable and shall have a different specification number than that of the specification covered by the notice. When applicable, a precautionary note shall be included as follows: "CAUTION: The supersession information is valid as of the date of this notice and may be superseded by subsequent revisions of the superseding document." When a QPL is associated with the "inactive for new design" specification, the following sentence shall be included in the notice: "The Qualified Products List (QPL) associated with this inactive for new design specification will be maintained until acquisition of the product is no longer required whereupon the specification and QPL will be canceled" (see figure 16). Inactive status can also be accomplished in a revision (see 5.2.4.1). Documents inactivated for new design may be maintained by revision or amendment without updating of the existing inactive for new design notice.

5.10.4 Cancellation notice. A cancellation notice shall be prepared when a specification or specification sheet is no longer required (see figures 17 and 18). A group cancellation may also be done for a general specification and associated specifications or specification sheets (see figure 19). The cancellation notice shall indicate supersession information and classification cross-references, when applicable. Custodians and review activities shall be shown.

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b. Example of significant PIN (second type).

"PIN: Consists of the letter M, the basic number of the specification sheet, and a dash number compiled from the code.

Specification
sheet number _____ Dash number _____

M12345/1- A 1 0 L 1A
Insert Shield and Shell type Jackscrews Contacts
shield clamp or
location or guide pins
retaining plate

PIN CODE:

<u>Insert</u>	<u>Shield and Shield clamp location or retaining plate</u>	<u>Shell type</u>
A - MS18264	Shield	0 - None
B - MS18240	1 - Top MS24132	
C - MS18242	2 - Side MS24132	
D - MS18244	3 - Top MS24133	
E - MS18246	4 - Side MS24133	
F - MS19258	5 - Top MS18193	
G - MS18250	6 - Side MS18193	
H - MS18252	0 - None included	
J - MS18254		

Jackscrews
or
guide pins

Contacts:

L - Long jackscrews	MS18194	1A - 100 percent size 16-16
S - Short jackscrews	MS18195	2A - 100 percent size 16-20"
G - Guidepins	MS18197	
0 - None included		

5.12.15 Revisions and amendments. Revisions shall be prepared in accordance with 5.7, and amendments shall be in accordance with 5.9.

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5.12.16 MS sheets. Existing MS Sheet Form Standards, as they are revised, shall be reformatted on 8-1/2 by 11 paper. The DD Form 672 has been discontinued and shall not be used. The existing MS number may be retained; however, it is preferred that existing MS numbers be converted to specification sheet numbers (see 5.2.3.1.1) if the renumbering does not adversely affect existing systems. If MS numbers are converted to specification sheet numbers, then substitution data shall be included to supersede every MS dash number. New specification sheets with the MS prefix shall not be prepared for any new specifications. MS specification sheets (formerly known as MS Sheet Form Standards) using the MS numbering system may continue to be used only with a specification where a series of MS numbered documents already exists.

6. NOTES

(This section contains information of a general or explanatory nature which may be helpful, but is not mandatory.)

6.1 Intended use. Specifications conforming to the requirements of this standard are intended for use as military standardization documents and are listed in the DoDISS. The general format described should also be considered for use in developing purchase descriptions and other non-DoDISS procurement specifications especially those which may be converted to a military standardization document at a later date.

6.2 Issue of DoDISS. When this standard is used in acquisition, the applicable issue of the DoDISS must be cited in the solicitation (see 2.2.1 and 2.3).

6.3 Associated Data Item Descriptions (DIDs). This standard is cited in DoD 5010.12-L, Acquisition Management Systems and Data Requirements Control List (AMSDL), as the source document for the following DIDs. When it is necessary to obtain the data, the applicable DIDs must be listed on the Contract Data Requirements List (DD Form 1423), except where the DoD Federal Acquisition Regulation Supplement exempts the requirement for a DD Form 1423.

<u>DID Number</u>	<u>DID Title</u>
DI-SDMP-81465	Performance Specification Documents
DI-SDMP-81464	Detail Specification Documents
DI-SDMP-81493	Program-Unique Specification Documents

The above DIDs were current as of the date of this standard. The current issue of the AMSDL must be researched to ensure that only current and approved DIDs are cited on the DD Form 1423.

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6.4 Tailoring guidance. To ensure proper application of this standard, invitations for bids, requests for proposals, and contractual statements of work should tailor the requirements in sections 4 and 5 of this standard to exclude any unnecessary requirements. For example, if the statement of work requires a revision to a stand alone specification, then all the paragraphs in this standard related to amendments, notices, supplements, and specification sheets should be excluded.

6.5 Subject term (key word) listing.

- Amendments
- Cancellation notices
- Data item descriptions
- Detail specifications
- Metric
- MS sheets
- Notices
- Performance specifications
- Program-unique specifications
- Reinstatement notices
- Revisions
- Specification sheets
- Standardization documents
- Supplements
- Validation notices

6.6 Supersession information. This standard supersedes the following documents:

- MIL-STD-961C dated 20 May 1988
- MIL-STD-490A dated 4 June 1985
- MIL-S-83490 dated 30 October 1968
- MIL-S-83490/1 dated 18 June 1974
- MIL-S-83490/2 dated 18 June 1974

6.7 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

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The following checklist may be used in specifications covered by this standard. It is not all inclusive, nor must every item listed be included. This is only a guide and not a replacement for the instructions in this standard.

1. Security classification
2. Document identifier
3. Initial draft note
4. Heading
5. Title
6. Supersession data
7. Preamble
8. Beneficial comments
9. FSC, FSG, or area
10. AMSC number or AMSC N/A
11. Distribution statement

SECTION 1: SCOPE

1. Scope
2. Classification

SECTION 2: APPLICABLE DOCUMENTS

1. Required general paragraph
2. Correct document numbers and titles
3. Documents referenced in sections 3, 4, and 5 only
4. Sources for documents
5. Order of precedence

SECTION 3: REQUIREMENTS

1. Paragraph on associated specifications, MS sheets, or specification sheets
2. Qualification
3. First article
4. Standard sample
5. Materials

6. Environmental considerations
7. Recycled, reclaimed, recovered material
8. Design
9. Construction
10. Hardware
11. Reliability
12. Maintainability
13. Transportability
14. Performance characteristics
15. Energy efficiency
16. Human factors
17. Safety
18. Chemical and physical properties
19. Electromagnetic interference suppression
20. Dimensions
21. Weight
22. Color
23. Finish
24. Identification plate
25. Anti-counterfeiting
26. Government-furnished property
27. Government-loaned property
28. Workmanship
29. Requirements covered examinations and tests in section 4

FIGURE 1. Checklist for drafting specifications.

4. VERIFICATION

4.1 Classification of inspections. The inspection requirements specified herein are classified as follows:

- a. First article inspection (see 4.2).
- b. Conformance inspection (see 4.3).

4.2 First article inspection. First article inspection shall be performed on one complete pumping assembly when a first article sample is required (see 3.1). This inspection shall include the examination of 4.4 and the tests of 4.5.1 through 4.5.6.

4.3 Conformance inspection. Conformance inspection shall include the examination of 4.4 and the tests of 4.5.1 and 4.5.4.

4.4 Examination. Each pumping assembly shall be examined for compliance with the requirements specified in 3.2 through 3.5. Any redesign or modification of the contractor's standard product to comply with specified requirements, or any necessary redesign or modification following failure to meet the specified requirements shall receive particular attention for adequacy and suitability. This element of inspection shall encompass all visual examinations and dimensional measurements. Noncompliance with any specified requirements or presence of one or more defects preventing or lessening maximum efficiency shall constitute cause for rejection.

4.5 Methods of inspection.

4.5.1 Hydrostatic. The pump and fittings shall be subjected to a hydrostatic test gauge pressure of 300 lb/in², for a period of 5 minutes to determine conformance to 3.6.2.

4.5.2 Performance.

4.5.2.1 Test conditions. All data shall be corrected to sea level conditions, barometric pressure 29.92 inches of mercury, for JP-5 and Navy special fuels at 60°F at a specific gravity of 0.80 and 0.98 respectively. Water at a temperature of 60°F to 80°F shall be used as a test fluid.

FIGURE 7. Example of section 4.

4.5.2.2 Pumping. The pump shall be operated as specified herein to determine pump brake horsepower required, pump efficiency, and the net positive suction head required, based on the data obtained. The resultant data shall be used to plot the corrected performance characteristics of the performance chart (see 3.8). The test shall be conducted in accordance with the Hydraulic Institute Standards of the HI, Centrifugal Pump Section. Performance at rates less than those specified in 3.6.1 shall constitute failure of this test.

4.5.3 Operational test. The pumping assembly shall be operated for 24 hours at the rated conditions specified in 3.6.1. The pump shall be examined at the end of each 8 hour interval during the 24 hours. Maintenance and minor adjustments shall be permitted during the examination periods. The pump shall be examined during the operation for leakage through the pump casing or the shaft seals and for malfunction of any component. Any leakage attributes to defects in design, workmanship, materials, or to the malfunction of any component, or inability of the pump to deliver the minimum capacities specified herein shall constitute failure of this test.

4.5.4 Functional test. The pump shall be operated 1 hour at rated capacity under the conditions specified in 3.6.1 and shall be operated as required to verify the functional operation of the controls. The control functions shall be in accordance with the applicable requirements of 3.7.

4.5.5 Tilted position. The pumping assembly shall be operated for not less than 30 minutes while it is positioned 15 degrees from level along the longitudinal centerline of the skid base. Evidence of malfunction or misalignment of components shall constitute failure of this test.

4.5.6 Cold starting. The pumping assembly shall be placed in a cold chamber at 20°F for 48 hours or until stabilization temperature is reached. The system shall demonstrate three successive starting cycles without the use of external power. Sufficient time shall be allowed so that components can return to 20°F equilibrium.

FIGURE 7. Example of section 4 - Continued.

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PROGRAM-UNIQUE SPECIFICATION PREPARATION GUIDELINES

A.1 GENERAL

A.1.1 Scope. This appendix establishes the style and format requirements and the content guidelines for program-unique system, item, software, process, and material specifications. This Appendix is a mandatory part of this standard when program-unique specifications are ordered. The information contained herein is intended for compliance.

A.1.2 Applicability. This appendix applies to DoD activities and contractors who are tasked with the preparation of specifications for program-unique systems, items, software, processes, and materials. Program-unique specifications are not DoDISS documents. They are not listed in the DoDISS, do not follow the DoDISS numbering methodology, and are not subject to the standardization document approval or maintenance process. The preparing activity typically assigns the document number using their local methodology. The tasking activity is the approval authority for program-unique specifications. Program-unique item and software specifications are to be prepared as unified specifications containing all applicable performance and design requirements in a single document as opposed to separate development (or requirements) and product specifications, as in the past.

A.1.3 Purpose. The purpose of this appendix is to provide uniform guidelines for the preparation of program-unique specifications. The preparing activity will be responsible for following the guidelines for specification content contained in this appendix for all types of program-unique specifications. The preparing activity will be responsible for selecting and completing the paragraphs identified within a specification section that are appropriate for the kind and complexity of system, item, software, process, or material being addressed in the specification.

A.2 APPLICABLE DOCUMENTS. No applicable documents are cited in this appendix.

A.3 DEFINITIONS.

A.3.1 Acronyms. Most of the acronyms used in this appendix are defined in 3.1. The following acronyms apply only to this appendix.

CAGE	-	Commercial and Government Entity
CSCI	-	Computer Software Configuration Item
DBDD	-	Data Base Design Description
GFP	-	Government Furnished Property
IDD	-	Interface Design Description

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IS	-	Item Specification
MS	-	Material Specification
PS	-	Process Specification
SDD	-	Software Design Description
SS	-	Software Specification
SYS	-	System Specification

A.3.2 Definitions. Most of the special words used in this appendix are defined in 3.2. The following definitions apply only to this appendix.

A.3.2.1 Entity. The general term used in this appendix to denote the system, item, software, process, or material that is the subject of the program-unique specification.

A.3.2.2 Program-unique specification. A specification that describes a system, item, software program, process, or material developed and produced (including repetitive fiscal year production and spares purchases) for use within a specific program, or as a part of a single system and for which there is judged to be little potential for use by subsequently developed systems.

A.4 GENERAL REQUIREMENTS FOR PROGRAM-UNIQUE SPECIFICATIONS

A.4.1 General. This section provides general requirements for the style and format, the selection and preparation of the paragraphs, the content and format of the cover page, and the format of a Requirements/Verification Cross-reference Matrix.

A.4.2 Style and format. Program-unique specifications shall meet the style and format requirements of section 4.

A.4.3 Paragraph selection and preparation. Program-unique specifications shall include the appropriate requirements as a part of the appropriate section of the specification. Table A-I, located at the end of this appendix, provides a listing of paragraph titles together with indicators showing when the paragraphs should be included in the various types of specifications. Section A.5 and table A-I provide content guidelines for the system specification (SYS), the item specification (IS), the software specification (SS), the process specification (PS), and the material specification (MS). Table A-I references the paragraphs in A.5 where information can be found prescribing the kind of requirements commonly included in that specification paragraph. Each paragraph cited as recommended in the table

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should be evaluated for applicability to the entity (see A.3.2.1) for which the specification is being prepared. Where the paragraph is determined to be applicable, the information recommended for inclusion in that paragraph should be provided. Titles need not be incorporated exactly as cited in A.5, especially if there is a more descriptive title that can be used (such as to indicate broader or narrower coverage of the topic area). Activities preparing program-unique specifications should ensure that the appropriate requirements (including any not covered herein that may be unique to the entity being specified) are incorporated as a part of the appropriate recommended paragraph of the specification or incorporated as additional paragraphs in the appropriate section of the specification.

A.4.4 Cover page. Program-unique specifications shall include a cover page as the first page (see figure A-1). The cover page shall include the specification identification (consisting of the original design activity Commercial and Government Entity (CAGE) code and specification number), specification revision level, type of specification, title of specification, the preparing activity name, address and CAGE code (if different than the original design activity CAGE code), the current change control authority CAGE code (if different than the original design activity CAGE code), the applicable distribution statement and, when applicable, the Federal Supply Class (FSC). If the document is managed as paper, and the preparing activity and current change control authority are different, the cover page may include preparation and approval signatures and dates. At the discretion of the current change control authority, the cover page may also include the contract number and CDRL sequence number under which the specification is submitted for approval by the current change control authority.

A.4.4.1 Identification of program-unique specifications. Program-unique specifications shall be identified and dated as specified in the following paragraphs.

A.4.4.1.1 Specification identifier. The program-unique specification identifier shall be generated by the original design activity and shall appear in the upper right corner of the first page. The identifier shall include any combination of numbers, letters, and dashes, subject to the following limitations:

- a. The number should not contain more than fifteen characters, including dashes.
- b. The letters I, O, Q, S, and Z shall not be used.
- c. The letters used shall be upper case.
- d. The numbers used shall be Arabic numerals. Fractional, decimal, and Roman numerals shall not be used.
- e. Blank spaces shall not be used within the specification number.
- f. Symbols such as parentheses "()", asterisks "*", plus "+", or similar shall not be used.

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- g. The specification revision letter shall not be considered as a part of the specification number.
- h. Specification numbers shall not be repeated within a CAGE-coded original design activity.

A.4.4.1.2 Revisions. Specifications shall be updated, as a result of an approved engineering change, only by means of a revision. A revision consists of a complete reissue of the entire specification, with all pages being undated and identified by the new revision letter assigned by the current configuration control authority. Revisions shall be indicated by a capital Gothic letter following the number. The first revision shall be marked with the letter "A" and succeeding revisions shall be indicated by the other letters in alphabetical sequence, except that the letters I, O, Q, S, and Z shall not be used. Revision letter "A" shall be assigned to the first revision. Each revision shall incorporate all outstanding approved wording changes since the last revision. Specification revisions shall be issued in the same manner as the original issue. A new cover page shall be generated reflecting the revision level and new date.

A.4.4.2 CAGE code. The CAGE code for the preparing activity of the specification shall be identified on the cover page. If a revision of the specification is being prepared, and if the design activity which is currently responsible for the specification is different than the original design activity, the CAGE code of the current change control authority shall be identified beneath the original design activity's CAGE code (see figure A-1).

A.4.4.3 Date of specification. The specification approval date shall appear on the cover page under the specification identifier.

A.4.4.4 Heading. Program-unique specifications shall have one of the following headings centered above the title:

- a. "PERFORMANCE SPECIFICATION" as defined in 3.29.
- b. "DETAIL SPECIFICATION" as defined in 3.9.

The letters "PRF", if it is a performance specification, or "DTL", if it is a detail specification, shall be entered in front of the specification number. These letters shall not be considered to be a part of the specification number.

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A.4.4.5 Type of specification. The appropriate type of program-unique specification shall be included as a part of the specification title, as follows:

"SYSTEM SPECIFICATION FOR THE"

"ITEM SPECIFICATION FOR THE"

"SOFTWARE SPECIFICATION FOR THE"

"MATERIAL SPECIFICATION FOR THE"

"PROCESS SPECIFICATION FOR THE"

A.4.4.6 Specification title. The specification title shall be the name by which the entity [system, item, software, process, or material] will be known. In most cases, it shall consist of the approved item name and type designator issued by the appropriate nomenclaturing activity. Specification titles shall not be duplicated within a program. References to major assemblies, end items, computer software units, processes, or materials shall be included in a title only to the extent necessary to distinguish between similar systems, items, software, processes, or materials. Where an approved item name is not required, the following guidelines shall be used in generating a specification title:

a. Specification titles may be in two parts. The first part shall be a descriptive name. The second part shall consist of those modifiers and government type designators as necessary to complete the identification.

b. No abbreviations shall be used in the first part of the title; abbreviations may be used in the second part of the title.

c. Specification titles shall not begin with numbers.

d. Specification titles shall be as brief as possible and shall be constructed so as to distinguish between similar items.

e. No word(s), symbol(s), or combination thereof which would disclose information regarding established security categories shall be used in specification titles.

A.4.4.7 "Submitted By" authorization signature and date. The applicable preparing design activity's authorizing signature and date indicating that the specification is complete and ready to submit to the government for approval shall be identified as follows: (Only required for paper copies.)

"SUBMITTED BY:"

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A.4.4.8 "Approved for use" authorization signature and date. The applicable government approval signature and date shall be identified as follows: (Only required for paper copies.)

"APPROVED FOR USE AS THE FUNCTIONAL BASELINE BY:"

"APPROVED FOR USE AS THE ALLOCATED BASELINE BY:"

"APPROVED FOR USE AS THE PRODUCT BASELINE BY:"

A.4.4.9 Distribution statement. (See 5.2.9.)

A.4.4.10 Designation of FSC. (See 5.2.7.)

A.4.4.11 Government rights in technical data and software. Where applicable, limited rights, restricted rights, or Government Purpose License Rights claims shall be identified on the cover page of the specification with the appropriate approved legend.

A.4.5 Cross-referencing requirements and verifications. Each requirement identified in section 3 shall be cross-referenced with the section 4 method used to verify compliance with the requirements. Section 4 of a program-unique performance specification shall include a Requirements/Verification Cross-Reference matrix (see figure A-2) which cross-references all the performance requirements in section 3 with the appropriate verification requirements in section 4. Likewise, section 4 of a program-unique detail specification shall include a Requirements/Verification Cross-Reference matrix (see figure A-3) which cross-references the performance and design requirements in section 3 with the appropriate verification requirements in section 4. If the performance specification has changed into a detail specification through the addition of the design requirements, the detail specification version of the matrix must continue to maintain the design verification column of the matrix, including all future approved engineering changes, as a separate column (classification) of verifications.

A.5 DETAILED GUIDELINES FOR SPECIFICATION CONTENT

A.5.1 SECTION 1 - SCOPE. This section should identify the name of the entity covered by this specification, including appropriate modifiers to better differentiate it from similar items. It should provide a clear, concise abstract of the coverage of the specification. It may include, whenever necessary, information as to the use of the entity other than specific detailed applications covered under "Intended use" (see A.5.6.1).

A.5.1.1 Identification. The beginning subparagraph in section 1 should identify the approved alphanumeric identifier, title, and if applicable, abbreviation of the entity to which this specification applies. If this specification is the identifying document for parts or materials, this paragraph should list the assigned part number(s) and, where applicable, the parameters which differentiate them.

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A.5.1.2 Entity type description. Where applicable, this paragraph should provide a brief description of the entity covered by the specification. It should identify all immediately subordinate functional elements of the entity, including, as applicable, their names, identifiers, and project-unique identifiers.

A.5.1.3 System overview. For software, this paragraph should briefly state the purpose of the system and the software to which this specification applies. It should describe the general nature of the system and software; summarize the history of system development, operation, and maintenance; identify the project sponsor, acquirer, user, developer, and support agencies; identify current and planned operating sites; and list other relevant documents.

A.5.2 SECTION 2, APPLICABLE DOCUMENTS. (See 5.3.2.1)

A.5.2.1 Government documents. (See 5.3.2.1.1, except that "specific revision levels" should be cited as shown in the following sample paragraphs in lieu of "issue listed in DoDISS".)

"2.1 Government documents."

"2.1.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks of the exact revision listed below form a part of this specification to the extent specified herein."

"2.1.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications of the exact revision level shown form a part of this document to the extent specified herein."

A.5.2.2 Non-Government documents. (See 5.3.2.1.2, except that "specific revision levels" should be cited for all non-Government documents, as shown in the following sample paragraph.)

"2. Non-Government publications. The following document(s) of the exact revision listed below form a part of this document to the extent specified herein."

A.5.2.3 Order of precedence. In order to avoid confusion in the possible conflict between the requirements of the specification and the documents referenced therein, the following statement should be included:

"2. Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this specification takes precedence. Nothing in this specification, however, supersedes applicable laws and regulations unless a specific exemption has been obtained."

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A.5.3 SECTION 3 - REQUIREMENTS. This section shall define the requirements that the entity must meet to be acceptable. Each requirement shall be stated in such a way that an objective verification can be defined for it. Each requirement should be cross-referenced to the associated verification (see A.4.5). For software, each requirement should be assigned a project-unique identifier to support testing and traceability. It should incorporate the essential requirements and constraints that apply to performance, design, interoperability, reliability, user personnel skill levels, and similar, of the entity covered by the specification. The requirements section shall be written so that compliance with all requirements will ensure the suitability of the entity for its intended purpose, and non-compliance with any requirement will indicate unsuitability for the intended purpose. Only requirements that are necessary, measurable, achievable, and verifiable shall be included. Requirements should not include, or be dependent upon, reference to test method documents or to quality assurance paragraphs within the specification. Each requirement paragraph (and subparagraphs, where applicable) should address only one requirement topic or area. Requirements shall be worded to provide a definitive basis for acceptance or rejection.

A.5.3.1 Functional and performance requirements.

A.5.3.1.1 Missions. Where applicable, this paragraph should describe the missions of the system to the extent that such missions affect design requirements. This description should include operational information such as tactics, system deployment, operating locations, and facilities. If this information is classified, it may be contained in a separate document and referenced in this paragraph.

A.5.3.1.2 Threat. Where applicable, this paragraph should describe the characteristics of potential targets, the characteristics of current and potential enemy weapon capabilities which are relevant to the system, and any additional threat considerations that affect the system design. This information may be contained in a separate document and referenced in this paragraph, especially if it is classified.

A.5.3.1.3 Required states and modes. If the entity is required to operate in more than one state or mode having requirements distinct from other states or modes, this paragraph should identify each state and mode. Examples of states and modes include: idle, ready, active, post-use analysis, training, degraded, emergency, backup, wartime, and peacetime. If states/ modes are required, each requirement or group of requirements in this specification should be correlated to the states and modes. A table or other method may be used to depict this correlation.

A.5.3.1.4 Entity capability requirements. Where applicable, this paragraph should, usually in a series of subparagraphs, identify all of the requirements associated with each capability of the entity. A "capability" is defined as a group of related requirements. The word "capability" may be replaced with "function," "subject," "object," or other term useful for presenting the requirements.

A.5.3.1.4.1 Entity capability. Each subparagraph should identify a required capability of the entity and should itemize the requirements associated with the capability in measurable terms. The requirements should specify the required behavior of the entity and should include applicable parameters

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such as response times, sequencing, accuracy, capacities (how much/how many), priorities, continuous operation requirements, and allowable deviations based on operating conditions. If the capability can be more clearly specified by dividing it into constituent capabilities, the requirements for each constituent capability should be provided as one or more sub-subparagraphs. Where applicable, the requirements should also address required behavior under unexpected or "out of bounds" conditions, requirements for error handling, and any provisions to be incorporated into the entity to provide continuity of operations in the event of emergencies.

A.5.3.1.5 Reliability. Where applicable, this paragraph should state the reliability requirements numerically (with confidence levels, if appropriate). Initially, reliability may be stated as a goal and a lower minimum acceptable requirement.

A.5.3.1.6 Maintainability. Where applicable, this paragraph should state the numerical maintainability requirements in such terms as Mean-Time-To-Repair or maintenance man-hours per flight or operational hour. The requirements for maintainability should address their achievement utilizing existing support equipment and software items, including that listed as a part of the government-furnished property interfaces, and new design support equipment and support software being developed as a part of this system. Initially, maintainability may be stated as a goal and a higher maximum acceptable requirement. This paragraph should include a reference to the logistics requirements contained in the specification as the basis for the maintainability.

A.5.3.1.7 Deployability. Where applicable, this paragraph should state the deployability requirements in terms of numerical limits (for example, two of a specific type of transport aircraft or one of a specific type of merchant vessel.) The limits should be related to the transport of a specific number of items over a specific distance for a specific period of deployment.

A.5.3.1.8 Availability. Where applicable, this paragraph should specify the extent to which the entity shall be in an operable and committable state at the start of the mission(s), where the mission(s) is called for at an unknown (random) point in time. If quantitative requirements for both reliability and maintainability are specified, this requirement is not applicable.

A.5.3.1.9 Environmental conditions. Where applicable, this paragraph should specify environments that the entity is expected to experience in shipment, storage, service, and use. [For entities which include software, these requirements would define the environment in which the Computer Software Configuration Item (CSCI) would operate, such as the computer hardware or the operating system on which the CSCI must run.] Where applicable, it specifies whether the system will be required to withstand, or be protected against, specified environmental conditions. In addition, it provides a description of the electromagnetic environment in which the system must operate effectively, the environment which it generates, and the external environments in which the item must survive. Where applicable, this paragraph should specify requirements pertaining to nuclear survivability. Where systems must survive the initial nuclear weapons effects phase, it should specify permissible deviations from system performance characteristics after exposure to nuclear detonation environments. [The initial

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effects phase occurs within the first minutes after detonation and includes electromagnetic pulse, blast, thermal radiation, and initial nuclear radiation effects.] It should specify performance requirements for mechanical configurations, optical components, electronic or electrical circuits and electronic components. Subparagraphs should be included as necessary to cover environmental conditions such as: climate, shock, vibration, noise, noxious gases, chemical agents, biological agents, and nuclear weapons effects.

A.5.3.1.10 Transportability. Where applicable, this paragraph should identify requirements for transportability which are common to all components to permit employment and logistic support. [For example, it might specify that the equipment be designed so that, with its packing for transport, each package would be no greater than ____ (volume units) and no more than ____ (length units) high, ____ (length units) wide, and ____ (length units) deep.] It should identify all major functional elements of the system or item that, due to operational characteristics, will be unsuitable for normal transportation methods (for example, oversize, hazardous, or delicate items).

A.5.3.1.11 Materials and processes. Where applicable, this paragraph should specify requirements for materials and processes to be used in the entity covered by the specification, except where it is more practicable to include the information in other paragraphs. Requirements of a general nature should be first, followed by specific requirements. Where applicable, this paragraph should address requirements which would form the basis for the development of new processes and materials specifically for this system or item. (Design constraint, see Table A-I.)

A.5.3.1.11.1 Toxic chemicals, hazardous substances, and ODCs. (See 5.3.3.9.)

A.5.3.1.11.2 Recycled, recovered, or environmentally preferable materials. (See 5.3.3.10.)

A.5.3.1.12 Electromagnetic radiation. Where applicable, this paragraph should specify requirements pertaining to electromagnetic radiation in terms of performance, design (including grounding requirements), and interface considerations.

A.5.3.1.13 Nameplates or product markings. Where applicable, this paragraph should specify all requirements pertaining to nameplates or markings, referencing applicable specifications, drawings, or standards. If part numbers are included in section 1, this paragraph should include the requirement that parts be marked with the design CAGE code and part number. Where applicable, this paragraph should address the use of special markings (for example, colored letters, lines, or dots) for function or identification coding and the use of stamped or imprinted information (for example, standard alloy designators or scannable bar codes) on the entity.

A.5.3.1.14 Producibility. Where applicable, this paragraph should require the selection of fabrication techniques, design parameters, and tolerances which enable the product to be fabricated, assembled, inspected, and tested economically and with repeatable quality. Product and process characteristics having a direct relationship to safety, performance, durability, or supportability should be

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matched to corresponding manufacturing capabilities. It should specify, where applicable, numerical values for the short-term process capability index for assessing this compatibility as a process qualification requirement and design tool. These requirements should include, as applicable and consistent with potential production quantities and rates, compatibility with flexible, automated or semi-automated, manufacturing and inspection processes.

A.5.3.1.15 Interchangeability. Where applicable, this paragraph should specify the requirements for the level of assembly at which components should be interchangeable or replaceable. Entries in this paragraph are for the purpose of establishing a condition of design and are not to define the conditions of interchangeability that are required by the assignment of a part number.

A.5.3.1.16 Safety. Where applicable, this paragraph should specify requirements to preclude or limit hazards to the physical environment and to personnel and equipment. To the extent practicable, it should cite established and recognized standards. It should identify those safety characteristics unique to the entity which constrain the design due to hazards in assembly, disassembly, test, transport, storage, operation, maintenance or disposal when they are not addressed by standard industrial or service practices. It should address "fail-safe" and emergency operating restrictions, when applicable. Where applicable, this paragraph should also state health and safety criteria, including physical, mechanical, biological and explosive effects. These criteria should include consideration of the toxicological effect and environmental impact of hazardous materials, waste and by-products; ionizing and non-ionizing radiation; provisions in the software to prevent inadvertent actions or non-actions; gas detection and warning devices; grounding of electrical systems; decontamination; explosion proofing; and mishap mitigating factors such as crash worthiness, escape and fire suppression systems. It should also identify special safety rules such as those required for nuclear weapons, including, as applicable, requirements for component design, prevention of inadvertent detonation, and compliance with nuclear safety rules.

A.5.3.1.17 Human factors engineering. Where applicable, this paragraph should specify human factors engineering requirements for the entity, including any special or unique requirements (for example, constraints on allocation of functions to personnel, interactions of communications and of personnel with equipment.) Included should be those specified areas, stations, or equipment that require concentrated human engineering attention due to the sensitivity of the operation or criticality of the task, particularly those areas where the effects of human error would be particularly serious. These requirements should include, as applicable, considerations for:

- a. Human information processing capabilities and limitations.
- b. Foreseeable human errors under both normal and extreme conditions (especially for input, display, control, maintenance and management of critical information and systems).
- c. Implications for the total system environment (including training, support, and operational environment).

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A.5.3.1.18 Security and privacy. Where applicable, this paragraph should specify security/privacy requirements that are basic to the design with respect to the operational environment of the entity. Where applicable, this paragraph should also specify those security requirements necessary to prevent access to the internal operating areas of the hosting system or item and compromise of sensitive information or materials. As applicable, these requirements should address the security and/or privacy environment in which the entity will operate, the type and degree of security or privacy to be provided, the security/privacy risks the entity should withstand, the security/privacy policy that should be met, the security/privacy accountability the entity should provide, and the criteria that should be met for security/privacy certification or accreditation. (To control dissemination of sensitive information, all or portions of this paragraph may be maintained and distributed separately from the remainder of the document.) (Design constraint, see Table A-I.)

A.5.3.1.19 Computer resource requirements. Where applicable, this paragraph should specify computer resource requirements (such as memory reserve, timing constraints, and capacity) necessary to assure that the entity meets its performance requirements. Depending on the nature of the entity, the computer resources covered in the subparagraphs may constitute the environment of the entity (as for a software entity) or the components of the entity (as for a hardware entity).

A.5.3.1.19.1 Computer hardware resource utilization requirements. Where applicable, this paragraph should specify the requirements on the entity's computer hardware resource utilization, such as maximum allowable use of processor capacity, memory capacity, input/output device capacity, auxiliary storage device capacity, and communications/network capacity. The requirements (stated, for example, as percentages of the capacity of each computer hardware resource) should include the conditions under which the resource utilization is to be measured. (Design constraint, see Table A-I.)

A.5.3.1.19.2 Design and implementation constraints. Where applicable, this paragraph should specify the requirements that constrain the design and implementation of the entity. For hardware-software entities, this paragraph should include physical requirements imposed on the entity. These requirements may be specified by reference to appropriate commercial or military standards and specifications. Examples include requirements concerning: (Design constraint, see Table A-I.)

a. Use of a particular CSCI architecture or requirements on the architecture, such as required databases or other software units; use of standard, military, or existing components; or use of government/acquirer-furnished property (equipment, information, software)

b. Use of a particular design or implementation standards; use of particular data standards; use of a particular programming language.

c. Flexibility and expandability that should be provided to support anticipated areas of growth or changes in technology, threat, or mission.

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A.5.3.1.19.2.1 Sizing and timing requirements. Where applicable, this paragraph should specify the amount and, if applicable, location of internal and auxiliary memory and the amount of processing time allocated to the CSCI. It should also specify the resources required of both the memory unit and the Central Processing Unit for the CSCI. (Design constraint, see Table A-I.)

A.5.3.1.19.2.2 Database/data bank requirements. Where applicable, this paragraph should specify any requirements imposed on databases/data banks that must be incorporated into the item. A data element dictionary may be referenced. (Design constraint, see Table A-I.)

A.5.3.1.19.2.3 Flexibility and expansion. Where applicable, this paragraph should specify areas of CSCI and computer hardware growth which require planning for system flexibility and expansion. In addition, this paragraph should define specific system or item elements which require spare capacity (for example, memory and timing) to support flexibility and expansion.

A.5.3.1.19.3 Software portability. Where applicable, this paragraph should specify requirements for the replication, distribution, and installation of new versions of software for the item. In addition, this paragraph should specify system or item requirements which will permit minimum cost and time impacts in the methods used for replication, deployment, and installation of the new versions of software to fielded systems or items. All logistic support considerations required for fielding new versions of software should be included.

A.5.3.1.19.4 Software supportability. Where applicable, this paragraph should identify requirements for software supportability; for integration or use of existing software support capabilities; for the development or delivery of added support resources; for any limitations on the use of any particular support facilities, computer equipment or software; and, if a waiver of the use of Ada has been approved, for use of a particular programming language.

A.5.3.1.19.5 Adaptation requirements. Where applicable, this paragraph should specify the requirements concerning installation-dependent data that the entity is required to provide (such as site-dependent latitude and longitude or site-dependent state tax codes) and operational parameters that the entity is required to use that may vary according to operational needs (such as parameters indicating operation-dependent targeting constants or data recording). (Design constraint, see Table A-I.)

A.5.3.1.19.6 Software quality factors. Where applicable, this paragraph should be divided into subparagraphs, as appropriate, to specify each software quality factor which must be achieved by this CSCI. These factors may include reusability (the ability to be used in multiple applications), testability (the ability to be easily and thoroughly tested), usability (the ability to be easily learned and used), and other attributes.

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A.5.3.1.20 Logistics. Where applicable, this paragraph should specify logistic considerations and conditions that will apply to the entity. It should define logistic conditions such as maintenance considerations, software support, modes of transportation, supply system requirements, and impact of existing facilities and equipment.

A.5.3.1.20.1 Maintenance. Where applicable, this paragraph should specify requirements relating to:

- a. Use of multipurpose test equipment.
- b. Repair versus replacement criteria.
- c. Levels of maintenance.
- d. Maintenance and repair cycles.
- e. Accessibility.

A.5.3.1.20.2 Supply. Where applicable, this paragraph should specify the limitations of the present supply system as a basis for the subassembly and piece part breakout of the entity. It should define supply elements such as centralized supply systems used for certain classes of parts, supply stock locations, and types of items stored at those locations.

A.5.3.1.20.3 Facilities and facility equipment. Where applicable, this paragraph should specify the constraints imposed on the system or item by the existing facilities and facility equipment.

A.5.3.1.21 Personnel and training. Where applicable, this paragraph should specify requirements imposed by, or limited by, personnel or training considerations. It should allocate the numbers and skills of personnel to the operation, maintenance, and control of the system, item, and software. It should also establish constraints on the types and degree of training relating to the use of existing facilities, to equipment, to special/emergency procedures, to hazardous tasks, and to the use of training simulators, as well as the need for additional facilities, equipment, and mission simulators.

A.5.3.1.21.1 Personnel. Where applicable, this paragraph should specify personnel requirements, in terms of numbers of personnel, which must be integrated into entity's design. Personnel requirements should include:

- a. Skills and numbers of personnel that should be allocated to the operation, maintenance, and control of the system or item.

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b. Numbers and skills of support personnel for each operational deployment mode and the intended duty cycle, both normal and emergency.

A.5.3.1.21.2 Training. Where applicable, this paragraph should include the following training requirements, as applicable:

- a. Restrictions on the type of training to be used for the system or item (for example, technical training school, local on-the-job training).
- b. Constraints specifying the use of available government training facilities and equipment.
- c. Required capabilities of training devices to be developed, characteristics of the training devices, and training and skills to be developed through the use of training devices.
- d. Limitations on the length of training time and on training locations.

A.5.3.1.22 Requirements traceability. This paragraph does not apply to the system specification or, if there is no system specification, the top-level item specification. Where applicable, this paragraph should provide: (Tables may be used to present this information.)

a. Traceability from each entity requirement in this specification to the top-level entity requirements it addresses, including traceability through the higher-level specifications between the entity and the top-level entity. (Alternatively, this traceability may be provided by annotating each requirement in section 3.)

Note: Each level of system refinement may result in requirements not directly traceable to higher-level requirements. For example, a system architectural design that creates multiple CSCIs may result in requirements about how the entities will interface, even though these interfaces are not directly covered in the higher-level entity requirements. Such requirements may be traced to a general requirement such as "entity implementation" or to the entity design aspects that resulted in their generation.

b. Traceability from each top-level entity requirement allocated to this entity and identification of all entity requirements that address it. All top-level entity requirements allocated to this entity should be accounted for. Those that trace to entity requirements contained in interface documentation should reference the interface document(s) by identifier and cite the applicable portions of the interface document that apply.

A.5.3.2 Interface requirements. Where applicable, this paragraph, or a series of subparagraphs, should describe interface requirements between this entity and other entities. Detailed quantitative interface requirements may be defined in separate specifications or interface control documents and referenced herein. (Design constraint, see Table A-I.)

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A.5.3.2.1 Government-Furnished Property (GFP) interfaces. Where applicable, this paragraph should identify the interface characteristics for all items of GFP that have been identified by the system engineering process for incorporation into the system, item, or software. It should include a list of all GFP items by their nomenclature, specification number, and part number. In addition, if software is furnished by the government to a contractor for integration into the system or item, it should be treated as GFP and identified in the specification by its software identifier, specification number, and part number. If the list of GFP is extensive, it may be included as an appendix to the specification and referenced in this paragraph.

A.5.3.2.2 External interface requirements. Where applicable, this paragraph should identify the external interfaces of the system, item, or software. An external interface diagram(s) may be used to aid in this description. It should identify each external interface by name (and, for software, project-unique identifier); should designate the interfacing entities (such as systems, configuration items, parts, software units) by name, number, version, and documentation reference(s); and should provide a brief description of each interfacing entity. The identification should also state which items already exist (and therefore impose interface requirements on interfacing entities) and which are being developed or modified (thus having interface requirements imposed on them). When applicable, identifying documentation, such as an interface control document, should be referenced for each interface. When appropriate, the paragraph should be divided into subparagraphs, as follows, to identify each required external interface and to specify the requirements associated with each interface. For this paragraph or each subparagraph, the requirements should address the following, as applicable, presented in any order suited to the requirements and should note any differences in these characteristics from the point of view of the interfacing entities (such as different expectations about the size, frequency, or other characteristics of data elements). (Design constraint, see Table A-I.)

- a. Priority that the entity should assign to the interface
- b. Requirements on the type of interface (such as real-time data transfer, storage-and-retrieval of data, and physical mounting points/dimensions) to be implemented
- c. Required characteristics of individual data elements that the entity should interact with (for example, provide, store, send, access, receive), such as:

(1) Names/identifiers

- (a) Project-unique identifier
- (b) Non-technical (natural language) name
- (c) DoD standard data element name
- (d) Technical name (for example, variable name or field name in the code or database)

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- (e) Abbreviated, acronym, or synonymous name
 - (2) Data type (such as alphanumeric, integer, floating point)
 - (3) Size and format (such as length and punctuation of a character string)
 - (4) Units of measurement (such as meters, dollars, nanoseconds)
 - (5) Range of enumeration of possible values (such as 0 - 99)
 - (6) Accuracy (how correct) and precision (number of significant digits)
 - (7) Priority, timing, frequency, volume, sequencing, and other constraints (such as whether the data element may be updated and whether business rules apply)
 - (8) Security and privacy constraints
 - (9) Sources (setting/sending entities) and recipients (using/receiving entities)
- d. Required characteristics of data element assemblies (such as records, messages, files, arrays, displays, and reports) that the entity should interact with (for example, provide, store, send, access, receive), such as:
- (1) Names/identifiers
 - (a) Project-unique identifier
 - (b) Non-technical (natural language) name
 - (c) Technical name (for example, record name or data structure name in the code or database)
 - (d) Abbreviated, acronym, or synonymous name
 - (2) Data elements in the assembly and their structure (such as number, order, grouping)
 - (3) Medium (such as disk) and structure of data elements/assemblies on the medium
 - (4) Visual and auditory characteristics of displays, and other outputs (such as colors, layouts, fonts, icons, beeps, lights)

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- (5) Relationships among assemblies (such as sorting/access characteristics)
- (6) Priority, timing, frequency, volume, sequencing, and other constraints (such as whether the data element may be updated and whether business rules apply)
- (7) Security and privacy constraints
- (8) Sources (setting/sending entities) and recipients (using/receiving entities)

e. Required characteristics of communication methods that the system should use for the interface, such as:

- (1) Project-unique identifier(s)
- (2) Communication links/bands/frequencies/media and their characteristics
- (3) Message formatting
- (4) Flow control (such as sequence numbering and buffer allocation)
- (5) Data transfer rate, whether periodic or aperiodic, and interval between transfers
- (6) Routing, addressing, and naming conventions
- (7) Transmission services, including priority and grade
- (8) Safety/security/privacy considerations (such as encryption, user authentication, compartmentalization, and auditing)

f. Required characteristics of protocols the entity should use for the interface, such as:

- (1) Project-unique identifiers
- (2) Priority/layer of the protocol
- (3) Packeting, including fragmentation and reassembly, routing, and addressing
- (4) Legality checks, error control, and recovery procedures
- (5) Synchronization, including connection establishment, maintenance, and termination
- (6) Status, identification, and any other reporting features

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g. Other required characteristics, such as physical compatibility of the interfacing entities (for example, dimensions, tolerances, loads, connector compatibility) or voltages.

A.5.3.2.2.1 Interface name (and project-unique identifier). Where applicable, this paragraph should identify each interface by name (and, for software, project-unique identifier), should briefly identify the interfacing entities, and should be divided into subparagraphs, as needed, to state the requirements imposed on this entity to achieve the interface. [Interface characteristics of the other interfacing entities should be stated as assumptions or as "When the (entity not covered by this specification) does this, the entity should", not as requirements on the other entities.] Where applicable, this paragraph and subparagraphs may reference other documents (such as data dictionaries, drawings/diagrams, standards for communications protocols, and standards for user interfaces) in place of stating the information here. (Design constraint, see Table A-I.)

A.5.3.2.2.1.1 Computer hardware requirements. Where applicable, this paragraph should specify the requirements regarding computer hardware that must be used by, or incorporated into, the entity. The requirements should include, as applicable, number of each type of equipment, type, size, capacity, and other required characteristics of processors, memory, input/output devices, auxiliary storage, communications/network equipment, and other required equipment.

A.5.3.2.2.1.2 Computer communications requirements. Where applicable, this paragraph should specify the additional requirements concerning the computer communications that must be used by the entity. Examples include geographic locations to be linked; configuration and network topology; transmission techniques; data transfer rates; gateways, required system use times; type and volume of data to be transmitted/received; time boundaries for transmission/reception/response; peak volumes of data; and diagnostic features. (Design constraint, see Table A-I.)

A.5.3.2.2.1.3 Computer software requirements. Where applicable, this paragraph should specify the requirements regarding computer software that must be used by, or incorporated into, the CSCI. Examples include operating systems, database management systems, communications/network software, utility software, input and equipment simulators, test software, and manufacturing software. The correct nomenclature, version, and documentation references of each software item should be provided. (Design constraint, see Table A-I.)

A.5.3.2.3 CSCI internal interfaces. Where applicable, this paragraph should specify the requirements imposed on interfaces internal to the CSCI. If all internal interfaces are left to the design, this fact should be so stated. If internal interface requirements are to be imposed, see A.5.3.2.2 and subparagraphs for a list of topics to be considered. (Design constraint, see Table A-I.)

A.5.3.2.4 CSCI internal data requirements. Where applicable, this paragraph should specify the requirements imposed on data internal to the CSCI. It should include requirements on databases and data files to be included in the CSCI. If all decisions about internal data are left to the design, this fact

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should be so stated. If such requirements are to be imposed, see A.5.3.2.2.c and A.5.3.2.2.d for a list of topics to be considered.

A.5.3.3 Design and construction. Where applicable, this paragraph should specify essential requirements that define the exact design of the entity covered by the specification. The subparagraphs should reference the design documentation that defines the design and should include appropriate design standards, workmanship requirements, and special production inspection requirements, as applicable. (Design requirements, see Table A-I.)

A.5.3.3.1 Production drawings. If the exact design of some or all of the parts of the item is to be controlled, this paragraph should include a statement similar to the following:

"This (item name) shall be fabricated and assembled in accordance with the drawings, parts lists, and other documents listed on (insert identification of data lists, index lists, parts lists or top drawing depending on which is the highest level listing of the applicable data) and on all lower-level drawings, parts lists, and other documents contained in Appendix (fill in appendix letter)."

A.5.3.3.2 Software design.

A.5.3.3.2.1 Executable files. Where applicable, this paragraph should provide, by reference to an enclosed or otherwise provided electronic medium, the executable files for the CSCI and any batch files, command files, or other software files needed to install and operate the software on its target computer(s). In order for a body of software to be considered a valid copy of the CSCI's executable files, it must be shown to match these executable files exactly..

A.5.3.3.2.2 Source files. Where applicable, this paragraph should provide, by reference to an enclosed or otherwise provided electronic medium, the source files for the CSCI and any batch files, command files, or other software files needed to regenerate the executable files for the CSCI. In order for a body of software to be considered a valid copy of the CSCI's source files, it must be shown to match these source files exactly.

A.5.3.3.2.3 "As built" software design. Where applicable, this paragraph should contain, or reference an appendix or other deliverable document that contains, information describing the design of the "as built" CSCI. The information should be similar to that required in a Software Design Description (SDD), Interface Design Description (IDD), and Database Design Description (DBDD), as applicable. If these documents, or their equivalents, are to be delivered for the "as built" CSCI, the paragraph should reference them. If not, the information should be provided in this document. Information included in the headers, comments, and code of the source code listings may be referenced and need not be repeated in this section. If the SDD, IDD, or DBDD is included in an appendix, the paragraph numbers and page numbers need not be changed.

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A.5.3.3.2.4 Compilation/build procedures. Where applicable, this paragraph should describe, or reference an appendix that describes, the compilation/build process used to create the executable files from the source files and to prepare the executable files to be loaded into firmware or other distribution media. It should specify the compiler(s)/assembler(s) to be used, including version numbers; other hardware and software needed, including version numbers; any settings, options, or conventions to be used; and procedures for compiling/assembling, linking, and building the CSCI and the software system/subsystem containing the CSCI, including variations for different sites, configurations, versions, and similar. Build procedures above the CSCI level may be presented in the hosting item specification and referenced in the software specifications.

A.5.3.3.2.5 Modification procedures. Where applicable, this paragraph should describe procedures that should be followed to modify the CSCI. It should include or reference information on the following, as applicable:

- a. Support facilities, equipment, and software, and procedures for their use
- b. Databases/data files used by the CSCI and procedures for using and modifying them
- c. Design, coding, or other conventions to be followed
- d. Compilation/build procedures if different from those above
- e. Integration and testing procedures to be followed

A.5.3.3.2.6 Computer hardware resource utilization. Where applicable, this paragraph should describe the "as built" CSCI's measured utilization of computer hardware resources (such as processor capacity, memory capacity, input/output device capacity, auxiliary storage capacity, and communications/network equipment capacity). It should cover all computer hardware resources included in the utilization requirements for the CSCI, in system-level resource allocations affecting the CSCI, or in the software development plan. If all utilization data for a given computer hardware resource is presented in a single location, such as in a single software specification, this paragraph may reference that source. Included for each computer hardware resource should be:

- a. The CSCI requirements or system-level resource allocations being satisfied. (Alternatively, the traceability to CSCI requirements may be provided in that paragraph.)
- b. The assumptions and conditions on which the utilization data are based (for example, typical usage, worst-case usage, assumption of certain events)
- c. Any special considerations affecting utilization (such as use of virtual memory, overlays, or multiprocessors or the impacts of operating system overhead, library software, or other implementation overhead)

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d. The units of measure used (such as percentage of processor capacity, cycles per second, bytes of memory, kilobytes per second)

e. The level(s) at which the estimates or measures have been made (such as software unit, CSCI, or executable program)

A.5.3.3.2.7 Design traceability. This section should provide:

a. Traceability from each CSCI source file to the software unit(s) that it implements, or, if a software unit corresponds to multiple source files, traceability from each source file to the detailed design aspects of those software units that it implements.

b. Traceability from each software unit to the source files that implement it, or if a software unit corresponds to multiple source files, traceability from each detailed design aspect of the software unit to the source files that implement it.

c. Traceability from each computer hardware resource utilization measurement to the CSCI requirements it addresses. (Alternatively, this traceability may be provided in the computer hardware resource utilization section.)

d. Traceability from each CSCI requirement regarding computer hardware resource utilization to the utilization measurements given in the computer hardware resource utilization section.)

A.5.3.3.3 Workmanship. Where applicable, this paragraph should specify the workmanship requirements and should include the necessary requirements relative to the standard of workmanship desired, freedom from defects, and general appearance of the finished product. The requirements should be so worded as to provide a logical basis for rejection in those cases where workmanship is such that the item is unsuitable for the purpose intended. Generally, no definite tests other than visual examination of workmanship should be applicable to the requirements of this paragraph.

A.5.3.3.4 Standards of manufacture. Where applicable, this paragraph should identify those standards or essential processes that, because of their significance, must be set forth as a requirement for the manufacture of the item. It should provide the level of detail necessary to clearly define verifiable metrics related to these standards. The requirements will normally reference standards, specifications, and similar documents issued by professional associations, by industry standardization organizations, and by the DoD.

A.5.3.3.5 Process definition. Where applicable, this paragraph should describe equipment, materials, and processing requirements for the program-unique process. It should identify key product features which must be controlled, the design limits for these key features, and the minimum process capability required for producing these key features.

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A.5.3.3.5.1 Equipment. Where applicable, this paragraph should list or describe equipment, such as heating media, and control devices, necessary to ensure that the process produces the desired results.

A.5.3.3.5.2 Materials. Where applicable, this paragraph should list, or reference specifications for, prime or basic materials, secondary materials, solutions, and similar, as required.

A.5.3.3.5.3 Required procedures and operations. Where applicable, this paragraph should provide detailed procedures that must be followed to assure that, when the process is performed, the resulting item or material will be in accordance with its requirements. It should address all process procedures and operations which control key product features. These requirements may be expressed in terms of the limits of key process variables required to assure product quality.

A.5.3.3.5.4 Recommended procedures and operations. Where applicable, this paragraph should cover optional or permitted procedures that would result in items or materials conforming to their requirements.

A.5.3.3.5.5 Certification. Where applicable, this paragraph should specify the requirements for certification of operators or of the process technique.

A.5.3.3.6 Material definition. Where applicable, this paragraph should describe the requirements, characteristics, and properties of the program-unique material. It should identify key product features which must be controlled and the design limits for these key features.

A.5.3.3.6.1 Character or quality. Where applicable, this paragraph should specify the general qualitative condition or property of the material.

A.5.3.3.6.2 Formulation. Where applicable, this paragraph should identify the quantitative values, with upper and lower limits, for the overall material and for each component of the material.

A.5.3.3.6.3 Product characteristics. Where applicable, this paragraph should identify specific conditions and properties such as color, protective coating, waviness, surface finish, dimensions, weight, and similar, that are necessary for the material to perform adequately in its intended use.

A.5.3.3.6.4 Chemical, electrical and mechanical properties. Where applicable, this paragraph should define the requirements for composition, concentration, hardness, tensile strength, elongation, thermal expansion, electrical resistivity, and similar, that are necessary for the material to perform adequately in its intended use.

A.5.3.3.6.5 Stability. Where applicable, this paragraph should define the requirements for shelf life and aging that are necessary for the material to perform adequately in its intended use and over its intended life.

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A.5.3.3.6.6 Differentiating requirements. Where applicable, this paragraph should specify the requirements which allow differentiation between two or more similar materials covered by this specification, for example, with part numbers.

A.5.3.4 Precedence and criticality of requirements. Where applicable, this paragraph should specify the order of precedence, criticality, or assigned weights indicating the relative importance of the requirements in this specification. Examples include identifying those requirements deemed critical to safety, to security, or to privacy for purposes of singling them out for special treatment. If all requirements have equal weight, this paragraph should so state.

A.5.4 SECTION 4 - VERIFICATION. This section should include all verifications to be performed to determine that the entity to be offered for acceptance conforms to all requirements in sections 3 of the specification. Single or multiple verification subparagraphs and methods may be required to verify a specific requirement. This section should not include quality assurance provisions that belong in the contract, such as responsibility for inspection, establishment of quality or inspection program requirements, warranties, instructions for nonconforming items, and contractor liability for nonconformance.

A.5.4.1 Methods of verification. Methods utilized to accomplish verification include:

a. Analysis. An element of verification that utilizes established technical or mathematical models or simulations, algorithms, charts, graphs, circuit diagrams, or other scientific principles and procedures to provide evidence that stated requirements were met.

b. Demonstration. An element of verification which generally denotes the actual operation, adjustment, or re-configuration of items to provide evidence that the designed functions were accomplished under specific scenarios. The items may be instrumented and quantitative limits of performance monitored.

c. Examination. An element of verification and inspection consisting of investigation, without the use of special laboratory appliances or procedures, of items to determine conformance to those specified requirements which can be determined by such investigations. Examination is generally nondestructive and typically includes the use of sight, hearing, smell, touch, and taste; simple physical manipulation; mechanical and electrical gauging and measurement; and other forms of investigation.

d. Test. An element of verification and inspection which generally denotes the determination, by technical means, of the properties or elements of items, including functional operation, and involves the application of established scientific principles and procedures.

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A.5.4.2 Classes of verification.

A.5.4.2.1 Design verification. When a performance specification is used, this paragraph should reference the portion of the cross-reference matrix specifying the requirements of section 3 that are the basis for the design verification, the inspection methods to be used, and the specific section 4 inspections to be used to verify the requirements. Where applicable, this paragraph should also define any requirements relating to mandatory sequence of inspections, number of units to be inspected, data to be recorded, and the criteria for determining conformance to the design verification requirements.

A.5.4.2.2 First article inspection. When a first article is required, the appropriate detail specification paragraph should reference the portion of the cross-reference matrix specifying the requirements of section 3 that are the basis for the first article inspection, the inspection methods to be used, and the specific section 4 inspections to be used to verify the requirements. Where applicable, this paragraph should also define any requirements relating to mandatory sequence of inspections, number of units to be inspected, data to be recorded, and the criteria for determining conformance to the first article inspection requirements.

A.5.4.2.3 Acceptance (conformance) inspection. Acceptance inspection is normally used for each production-line unit of the item prior to its delivery to, and acceptance by, the government. Where applicable, this paragraph of the detail specification for an item, software, or a material should reference the portion of the cross-reference matrix specifying the requirements of section 3 that are the basis for the acceptance inspection, the inspection methods to be used, and the specific section 4 inspections to be used to verify the requirements. Where applicable, this paragraph should also define any requirements relating to mandatory sequence of inspections, number of units to be inspected, data to be recorded, and the criteria for determining conformance to the acceptance inspection requirements.

A.5.4.2.3.1 Sampling inspection. Where sampling is used, sampling plans should be based on a zero failure lot acceptance criterion either included in this paragraph or submitted separately by the contractor to the government for approval. Through an effective statistical process control program, either sampling or 100 percent inspection may be reduced or eliminated. The appropriate inspection level and the designated sampling plan should be specified in this paragraph.

A.5.4.2.3.1.1 Inspection lot. When inspections are to be based on lots or samples from lots, this paragraph should provide the definition of what constitutes an inspection lot. Restrictions concerning the formation of inspection lots, such as limiting inspection lots to like units of the same part number or manufacturing lot number, should be specified. (Note: An inspection lot is distinct from a manufacturing lot; inspection lot numbers should not be required to be marked on parts.)

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A.5.4.2.3.1.2 Classification of defects. When applicable, this paragraph should provide the classification of defects as critical, major, or minor. Defect numbers should be in accordance with the following:

- 1 through 99 - critical defects
- 101 through 199 - major defects
- 201 through 299 - minor defects

If additional groupings are required, they should be numbered in the 301, 401, and 501 series. If the number of defects in any group exceeds 100, the series should start over with a letter suffix (for example, 101a, 102a, 103a.) When the classification of defects or classification of characteristics is relatively extensive, a tabular listing of the defects and their related specification, drawings and inspection methods may be used.

A.5.4.3 Inspections. In a series of subparagraphs, this paragraph should list all analyses, demonstrations, examinations, and tests required to verify that all requirements of section 3 have been achieved in the entity.

A.5.4.3.1 General inspection requirements. Unless otherwise specified, the following requirements should apply to all verification classes and methods.

A.5.4.3.1.1 Inspection conditions. When applicable, this paragraph should identify the environmental conditions under which all inspections of production items (first article and acceptance) are performed, as illustrated in the following example:

"Inspection conditions. Unless otherwise specified, all inspections shall be performed in accordance with the test conditions specified in [applicable test method document] or [applicable paragraph(s) in the specification]."

A.5.4.3.1.2 Inspection equipment. Where applicable, this paragraph should identify the inspection equipment required to perform the specified inspections and should relate the equipment to each inspection characteristic, as appropriate. This may cover the broad scope from standard measuring equipment (commercial) to complex, Specially-designed Inspection Equipment.

A.5.4.3.1.3 Toxicological product formulations. When section 3 of the specification includes a requirement for review of the toxicological product formulations (see A.5.3.1.10), the following is an example of the statement that should be included in section 4:

"Toxicological data and product formulations. The toxicological product formulations and associated information shall be reviewed to evaluate the safety of the material for the proposed use."

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A.5.4.3.2 Detailed inspection requirements. Where applicable, this paragraph should provide the details of all of the inspections to be used in verifying that the requirements of sections 3 have been met. Where appropriate, the detailed inspections should be provided in a series of subparagraphs to completely depict all of the detailed inspections. The subparagraphing should be arranged in some logical order, normally by subassembly being inspected, functional grouping being inspected, type of inspection being accomplished, following the order of the section 3 requirements, or similar.

A.5.4.3.2.1 Detailed inspection element X. A separate paragraph should be included for each detail element of the inspection to be conducted on the entity. Where subparagraphing is necessary to define all of the requirements, this should be a title paragraph; where subparagraphing is not necessary, all of the information should be provided with this heading.

A.5.4.3.2.1.1 Methods of inspection. Where applicable, this paragraph should describe, in detail, the inspection to be used on the entity. The description should include the inspection method, location and number of inspections, inspection routine, and criteria for determining conformance. Inspection methods appearing in standards and in other appropriate standardization documents should be included only by reference. Where applicable, this paragraph should include identification of the specific options selected from the applicable inspection method standards for use in the inspection of this entity.

A.5.4.3.2.1.2 Special inspection conditions. When applicable, this paragraph should specify the special environmental conditions under which this specific inspection is to be performed.

A.5.4.3.2.1.3 Special inspection equipment. When applicable, this paragraph should include requirements relating to the adequacy of the inspection equipment. Where special inspection equipment is critical to the accurate performance of this specific inspection, it should be identified by design CAGE code and part number in this paragraph.

A.5.5 SECTION 5 - PACKAGING. (See 5.3.5.)

A.5.6 SECTION 6 - NOTES. The information provided in section 6 of a specification is not contractually binding unless it is specifically referenced in sections 3 or 4. Section 6 should only contain information of a general or explanatory nature, and no requirements should appear therein. It should contain information designed to assist in determining the applicability of the specification and other information deemed appropriate. Section 6 should include, as applicable, the information required by the succeeding paragraphs and information relating to the following topics:

- a. Intended use
- b. Special requirements (other than "first article", "standard sample", and similar) that must be incorporated in the contract if the specification is cited in a contract.

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c. Requirement to cite DoDISS issue in effect for the contract invoking this specification, if specific revision levels are not specified in section 2.

d. Definitions

e. List of acronyms and abbreviations

f. Other information as necessary.

The following parenthetical note should appear immediately below the header, "6. NOTES":

"(This section contains information of a general or explanatory nature that may be helpful but is not mandatory.)"

A.5.6.1 Intended use. This paragraph should include information relative to the use of the entity covered by the specification. If applicable, the differences among types, grades, and classes of entities in the specification should be explained. If there are any particular applications for which the entity is not well adapted, this information also may be included. This paragraph should not restate information that is covered in section 1, the Scope section.

A.5.6.2 Government-furnished property. When GFP is listed in the specification, and if the GFP is to be furnished as military property, the following paragraph should be included in section 6 of the specification:

"6. Government-furnished property (GFP). The contracting officer should arrange to furnish the property listed in 3. in accordance with the contract."

A.5.6.3 International standardization agreements. (See 5.3.6.14)

A.5.7 APPENDIXES. An appendix, identified by the heading "APPENDIX", is an optional section of provisions added at the end of a specification. An appendix may be used to append large (multi-page) data tables, a specification tree, software design documentation, interface documents, classified information, or other information or requirements related to the entity that would normally be included in the specification but would, by its bulk or content, tend to degrade the usefulness of the specification. In all cases where an appendix is used, reference to the appendix should be included in sections 2, 3, or 4 of the specification. The following types of appendixes are often used in software and item specifications and require further content guidelines.

A.5.7.1 Software appendixes. The software specification should incorporate the following appendixes, as applicable:

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A.5.7.1.1 Appendix A, Software design. This appendix should contain the software design information if that information is not contained in the software design paragraph in section 3 or in another document referenced in that paragraph.

A.5.7.1.2 Appendix B, Source code listings. This appendix should contain the source code listings of the CSCI if they are not contained in the software design paragraph in section 3.

A.5.7.1.3 Appendix C, Interface design. This appendix should contain the interface design information, if applicable and if that information is not contained in the software design paragraph in section 3 or in another document referenced in that paragraph.

A.5.7.1.4 Appendix D, Data base design. This appendix should contain the data base design information, if applicable and if that information is not contained in the software design paragraph in section 3 or in another document referenced in that paragraph.

A.5.7.2 Appendixes for multiple-entity specifications. When multiple items, software programs, processes, or materials are to be covered by a single specification, a listing of all entities, including a reference to the appendix containing the detailed requirements of each, should be included in section 3 of the specification. A separate appendix should be prepared for each item listed in section 3; the appendix should be in the same six-section format as the basic specification.

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TABLE A-1. Specification content guidelines.

<u>SUGGESTED PARAGRAPH TITLE</u>	<u>CONTENTS OF</u>					<u>REF PARA</u> <u>A.5.1</u>
	<u>SYS</u> <u>R</u>	<u>IS</u> <u>R</u>	<u>SS</u> <u>R</u>	<u>PS</u> <u>R</u>	<u>MS</u> <u>R</u>	
1. SCOPE						
Identification	RI	RI	RI	RI	RI	A.5.1.1
Entity description	RI	RI	RI	RI	RI	A.5.1.2
System overview	RI		RI			A.5.1.3
2. APPLICABLE DOCUMENTS	R	R	R	R	R	A.5.2
Government documents	RI	RI	RI	RI	RI	A.5.2.1
Non-government documents	RI	RI	RI	RI	RI	A.5.2.2
Order of precedence	RI	RI	RI	RI	RI	A.5.2.3
3. REQUIREMENTS	R	R	R	R	R	A.5.3
Functional and performance requirements	FP	FP	FP	FP	FP	A.5.3.1
Missions	FP					A.5.3.1.1
Threat	FP					A.5.3.1.2
Required states and modes	FP	FP	FP			A.5.3.1.3
Entity capability requirements	FP	FP	FP	FP	FP	A.5.3.1.4
Entity capability	FP	FP	FP	FP	FP	A.5.3.1.4.1
Reliability	FP	FP	FP			A.5.3.1.5
Maintainability	FP	FP	FP			A.5.3.1.6
Deployability	FP					A.5.3.1.7
Availability	O	O	O			A.5.3.1.8
Environmental conditions	FP	FP			FP	A.5.3.1.9
Transportability	FP	FP				A.5.3.1.10
Materials and processes	DC	DC			DC	A.5.3.1.11
Toxic, hazardous substances, and ozone depl chemicals (ODCs)	FP	FP			FP	A.5.3.1.11.1
Recycled, recovered, or environmentally preferable materials	FP	FP			FP	A.5.3.1.11.2
Electromagnetic radiation	FP	FP				A.5.3.1.12
Nameplates or product markings	FP	FP			FP	A.5.3.1.13
Producibility	FP	FP				A.5.3.1.14
Interchangeability	FP	FP				A.5.3.1.15
Safety	FP	FP	FP		FP	A.5.3.1.16
Human factors engineering	FP	FP	FP			A.5.3.1.17

LEGEND

R - REQUIRED SECTION TITLE
FP - FUNCTIONAL/PERFORMANCE REQUIREMENT
DC - DESIGN CONSTRAINT
DS - DESIGN SOLUTION INCORPORATED INTO A DETAIL SPECIFICATION
O - OPTIONAL REQUIREMENT
RI - RELATED INFORMATION
V - VERIFICATIONS RELATED TO SECTION 3 REQUIREMENTS

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TABLE A-I. Specification content guidelines - continued.

<u>SUGGESTED PARAGRAPH TITLE</u>	<u>CONTENTS OF</u>					<u>REF PARA</u>
	<u>SYS</u> <u>DC</u>	<u>IS</u> <u>DC</u>	<u>SS</u> <u>DC</u>	<u>PS</u>	<u>MS</u>	
Security and privacy						A.5.3.1.18
Computer resource requirements	FP	FP				A.5.3.1.19
Comp hardware resource utilization requirements	DC	DC	DC			A.5.3.1.19.1
Design and implement constraints	DC	DC	DC			A.5.3.1.19.2
Sizing and timing requirements	DC	DC	DC			A.5.3.1.19.2.1
Database/data bank requirements	DC	DC				A.5.3.1.19.2.2
Flexibility and expansion	FP	FP	FP			A.5.3.1.19.2.3
Software portability	FP	FP	FP			A.5.3.1.19.3
Software supportability	FP	FP				A.5.3.1.19.4
Adaptation requirements			DC			A.5.3.1.19.5
Software quality factors	FP	FP	FP			A.5.3.1.19.6
Logistics	FP	FP	FP			A.5.3.1.20
Maintenance	FP	FP				A.5.3.1.20.1
Supply	FP	FP				A.5.3.1.20.2
Facilities and facility equipment	FP	FP				A.5.3.1.20.3
Personnel and training	FP	FP				A.5.3.1.21
Personnel	FP	FP				A.5.3.1.21.1
Training	FP	FP				A.5.3.1.21.2
Requirements traceability			FP			A.5.3.1.22
Interface requirements	FP	FP	FP			A.5.3.2
Gov't-furnished property (GFP) interfaces	DC	DC	DC			A.5.3.2.1
External interface requirements	FP	FP	FP			A.5.3.2.2
Interface name (and project-unique identifier)	FP	FP	FP			A.5.3.2.2.1
Computer hardware reqts	DC	DC	DC			A.5.3.2.2.1.1
Computer communications reqts	DC	DC	DC			A.5.3.2.2.1.2
Computer software reqts	DC	DC	DC			A.5.3.2.2.1.3
CSCI internal interfaces			FP			A.5.3.2.3
CSCI internal data requirements			DC			A.5.3.2.4
Design and construction		DS	DS	DS	DS	A.5.3.3
Production drawings		DS				A.5.3.3.1

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TABLE A-I. Specification content guidelines - continued.

<u>SUGGESTED PARAGRAPH TITLE</u>	<u>CONTENTS OF</u>					<u>REF PARA</u>
	<u>SYS</u>	<u>IS</u>	<u>SS</u> <u>DS</u>	<u>PS</u>	<u>MS</u>	
Software design						A.5.3.3.2
Executable files			DS			A.5.3.3.2.1
Source files			DS			A.5.3.3.2.2
"As built" software design			DS			A.5.3.3.2.3
Compilation/build procedures			DS			A.5.3.3.2.4
Modification procedures			DS			A.5.3.3.2.5
Computer hardware resource utilization			DS			A.5.3.3.2.6
Design traceability			DS			A.5.3.3.2.7
Workmanship		DS			DS	A.5.3.3.3
Standards of manufacture		DS				A.5.3.3.4
Process definition				DS		A.5.3.3.5
Equipment				DS		A.5.3.3.5.1
Materials				DS		A.5.3.3.5.2
Required procedures and operations				DS		A.5.3.3.5.3
Recommended procedures and operations				DS		A.5.3.3.5.4
Certification				DS		A.5.3.3.5.5
Material definition					DS	A.5.3.3.6
Character or quality					DS	A.5.3.3.6.1
Formulation					DS	A.5.3.3.6.2
Product characteristics					DS	A.5.3.3.6.3
Chemical, electrical and mechanical properties					DS	A.5.3.3.6.4
Stability					DS	A.5.3.3.6.5
Differentiating requirements					DS	A.5.3.3.6.6
Special inspection requirements		DS			DS	A.5.3.3.7
First article		DS			DS	A.5.3.3.7.1
Standard sample		DS			DS	A.5.3.3.7.2
Precedence and criticality of requirements	FP	FP	FP	FP	FP	A.5.3.4
4. VERIFICATION	R	R	R	R	R	A.5.4
Methods of verification	V	V	V	V	V	A.5.4.1
Classification of inspections		V		V	V	A.5.4.2
Design verification	V	V	V		V	A.5.4.2.1

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TABLE A-1. Specification content guidelines - continued.

<u>SUGGESTED PARAGRAPH TITLE</u>	<u>CONTENTS OF</u>					<u>REF PARA</u>
	<u>SYS</u>	<u>IS</u>	<u>SS</u>	<u>PS</u>	<u>MS</u>	
First article		V				A.5.4.2.2
Acceptance		V				A.5.4.2.3
Sampling inspection		V				A.5.4.2.3.1
Inspection lot formation		V				A.5.4.2.3.1.1
Classification of defects		V				A.5.4.2.3.1.2
Inspections	V	V	V	V	V	A.5.4.3
General inspection requirements	V	V	V	V	V	A.5.4.3.1
Inspection conditions	V	V		V	V	A.5.4.3.1.1
Inspection equipment	V	V		V	V	A.5.4.3.1.2
Toxicological product formulations		V		V	V	A.5.4.3.1.3
Detailed inspection requirements	V	V	V	V	V	A.5.4.3.2
Detailed inspection element	V	V	V	V	V	A.5.4.3.2.1
Methods of inspection	V	V		V	V	A.5.4.3.2.1.1
Special inspection conditions	V	V		V	V	A.5.4.3.2.1.2
Special inspection equipment	V	V		V	V	A.5.4.3.2.1.3
5. PACKAGING	R	R	R	R	R	A.5.5
6. NOTES	R	R	R	R	R	A.5.6
Intended use	RI	RI	RI	RI	RI	A.5.6.1
Government-furnished property (GFP)	RI	RI	RI		RI	A.5.6.2
International standardization agreements	RI	RI				A.5.6.3
Inspection for first article		RI				A.5.6.4
Standard sample	RI				A.5.6.5	
APPENDIXES	O	O	DS	O	O	A.5.7
Software appendixes			DS			A.5.7.1
Appendix A, Software Design			DS			A.5.7.1.1
Appendix B, Source Code Listings			DS			A.5.7.1.2
Appendix C, Interface Design			DS			A.5.7.1.3
Appendix D, Database Design			DS			A.5.7.1.4
Appendixes for multiple entity specs	O	O		O	O	A.5.7.2

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PRF (or DTL) XYZ-11000B
CAGE Code 33333
Current Chg Ctl Auth:
CAGE Code 44444
9 March 1995

PERFORMANCE SPECIFICATION
(use the head "DETAIL SPECIFICATION", if applicable)

ITEM SPECIFICATION

FOR THE

ITEM NAME, MODIFIER, [DESIGNATOR]

Prepared for:
BUYING ACTIVITY
Any Base CA 90987-4321

Prepared by:
Design Activity Name
Street Address
Any Town OH 40678

SUBMITTED BY: [Authorizing Signature] DATE: 24 February 1995
Charles H. Smith
PROGRAM NAME Manager
Design Activity Name

APPROVED FOR USE AS
XXXXXX* BASELINE BY: [Authorizing Signature] DATE: 9 March 1995
Henrietta K. Jones, Captain, USN
PROGRAM NAME Manager
Buying Activity Name

* - Use "FUNCTIONAL" or "ALLOCATED", as applicable, for Performance Specifications;
use "PRODUCT" for Detail Specifications.

DISTRIBUTION STATEMENT A: Approved for public release; distribution is unlimited. FSC 1234

FIGURE A-1. Example of cover page for a program-unique specification.

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[illegible]

FIGURE A-2. Sample requirements/verification cross-reference matrix for performance specification

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REQUIREMENT / VERIFICATION CROSS-REFERENCE MATRIX									
METHOD OF VERIFICATION					CLASSES OF VERIFICATION				
N/A - NOT APPLICABLE 1 - ANALYSIS 2 - DEMONSTRATION 3 - EXAMINATION 4 - TEST					A - DESIGN VERIFICATION B - FIRST ARTICLE C - ACCEPTANCE				
SECTION 3 REQUIREMENT	VERIFICATION METHOD					VERIFICATION CLASS			SECTION 4 VERIFICATION
	N/A	1	2	3	4	A	B	C	
3.1.3.1					X	X	X		4.3.2.1.1
3.1.3.2		X				X	X		4.3.2.2.3
					X	X	X		4.3.2.5.1
			X					X	4.3.2.9.5
3.1.3.3	X								
3.1.3.1.1			X			X	X		4.3.2.3.1
3.1.3.1.2					X	X	X		4.3.2.3.2
3.1.3.1.3		X				X			4.3.2.3.5
					X	X			4.3.2.3.6
3.1.3.1.4		X					X	X	4.3.2.9.1.1
					X		X	X	4.3.2.9.1.2
					X			X	4.3.2.9.1.3
3.2	X								
3.2.1			X			X	X		4.3.2.6.1
				X				X	4.3.2.9.7.1
		X						X	4.3.2.9.7.2
3.2.2	X								
3.2.2.1		X				X			4.3.2.6.1
			X			X			4.3.2.6.3
3.2.2.2		X				X			4.3.2.6.1
			X			X			4.3.2.6.5
					X			X	4.3.2.6.6
3.3.1				X				X	4.3.2.8.1
		X						X	4.3.2.8.2
				X				X	4.3.2.9
3.3.2	X								
3.3.2.1		X						X	4.3.2.10.1
3.3.2.2					X			X	4.3.2.10.2
3.3.3			X					X	4.3.2.11.1

FIGURE A-3. Sample requirements/verification cross-reference matrix
for detail specification

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